

DEVELOPMENT AND CULTURAL CHANGE: MIGRATION AMONG URBAN  
AGRICULTURALISTS OF MEXICO CITY

By

PABLO TORRES-LIMA

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL  
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1997

This dissertation is dedicated to my parents, José de Jesús Torres Gómez and Luz María Lima Armas (q.e.p.d.), my wife Angeles E. Vega Vera and my children, Andalucía and Paulina Torres Vega. Everyone knows why.

It is also dedicated to my sister, Luz Estela, who generously supported my academic career during the first years, and to my brother, Héctor Jesús, for sharing with me his research experiences.

#### ACKNOWLEDGMENTS

I am indebted to many individuals and institutions that supported and encouraged my doctoral studies and this research. Being a Mexican, studying agriculture and coming from Maine, I am particularly grateful to Dr. Allan F. Burns for his guidance, generous support, encouragement, important insights on my professional career and my doctoral studies, and his friendship. As academic supervisor, he guided this dissertation and was crucial support to the project. I am grateful to the many people of the communities of Milpa Alta and Xochimilco, Mexico City, who shared with me their generosity, friendship, culture, history, their knowledge of farming and experiences of migration. I am also grateful to the Consejo Nacional de Ciencia y Tecnología (México), Universidad Autónoma Metropolitana and Fulbright Foundation who provided me a scholarship for pursuing my graduate program. The research component was made possible by a grant from the North-South Center of the University of Miami to Dr. Allan F. Burns and Pablo Torres-Lima, and with the financial support of Universidad Autónoma Metropolitana-Xochimilco to Pablo Torres-Lima, whose help is gratefully acknowledged. I also thank the collaboration of Venus Armenta, Olga Gallo, Laura González, Leticia Morales, Esperanza Lugo, Lucero

Sánchez and Gerardo Chavero in the data collection and processing. Special acknowledgment is due to Leticia Sánchez Hernández for her continuing interest in my doctoral work. I am also in debt with Beatriz Canabal Cristiani, Guillermo Pérez Gerónimo, Rafael Calderón Arozqueta, Fernando de León, Jorge León Dousset, and Salvador Vega y León, who have been crucial support in this academic journey by providing me their friendship and intellectual collaboration. The administrative staff of the Departamento de Producción Agrícola y Animal of the Universidad Autónoma Metropolitana-Xochimilco have showed their willingness to do things for my academic duties.

I am particularly indebted to Dr. Paul Doughty for his academic support during difficult times in my graduate work and for sharing with me his human values. I am grateful to the members of my doctoral committee, Drs. Marianne Schmink, Ivonne Audirac-Zazueta and Hugh Popenoe, who gave me important recommendations and advice for this dissertation. I thank friends and colleagues who have given me support, particularly Marcia Good Maust for her generosity in helping me in my academic duties. I am grateful to Tropical Research and Development Inc., and The Institute of Child Health Policy of the University of Florida, which hired me as a part of their staff and where I had the opportunity to develop some professional skills. Finally, thanks are expressed to Karen, Pat, Michelle and Fran, who are staff members of the department of Anthropology at the University of Florida.

## TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS.....	iii
LIST OF TABLES.....	vii
LIST OF FIGURES.....	x
ABSTRACT.....	xi
 CHAPTERS	
1 TERRAINS OF RESEARCH .....	1
Introduction .....	1
Research Issues .....	12
Regional Culture and Development of Agricultural Communities of Mexico City .....	12
Current Migration Trends and Mexico-United States Integration .....	24
The Study Areas and Research Methodology .....	30
The Urban Agriculturalists of Xochimilco and Milpa Alta, Mexico City .....	30
Methodological Fieldwork Considerations .....	35
Dissertation Outline .....	38
2 ENVIRONMENT AND REGIONAL CULTURE .....	40
Introduction .....	40
Human-Environment Interactions in Ecological Anthropology .....	42
Environment and Culture, the Setting for the Region in Cultural Anthropology .....	42
Ecological Systems and Anthropology from Neofunctionalism .....	46
Processual Ecological Anthropology .....	52
Concluding Remarks .....	57
3 ETHNOHISTORIC PROFILE OF URBAN AGRICULTURE IN SOUTHERN MEXICO CITY .....	61
Introduction .....	61
The Aztec Model of Civilization and Tenochtitlan .....	63
City, Civilization and Agriculture .....	70

Regional Economic Structure and the Urban Agricultural City .....	76
Concluding Remarks .....	81
4 REGIONAL AND INTERNATIONAL MIGRATION PATTERNS AMONG URBAN AGRICULTURALISTS .....	83
Territorial Integration and Population .....	83
Migration to Mexico City and Employment .....	89
Migration to other States of Mexico and the United States .....	94
Concluding Remarks .....	98
5 SOCIODEMOGRAPHIC PROFILE OF URBAN AGRICULTURALISTS ..	102
Sociodemographic Characteristics .....	102
Age, Gender and Marital Status .....	102
Education, Employment and Migration .....	107
Agricultural Characteristics .....	113
Farming Systems .....	113
Land Tenure and Migration .....	117
Agricultural Employment and Income, and Migration .....	120
Concluding Remarks .....	127
6 MIGRATION AND CULTURE .....	131
Quality of Life among Urban Agriculturalists .....	131
Cultural Strategies of Migration .....	141
Concluding Remarks .....	152
7 CONCLUSIONS .....	156
Regional Culture of Urban Agriculturalists .....	158
Migration and Development among Urban Agriculturalists .....	162
Contemporary Imperatives .....	167
APPENDIX MIGRATION SURVEY .....	171
LIST OF REFERENCES .....	185
BIOGRAPHICAL SKETCH .....	199

## LIST OF TABLES

<u>Table</u>	<u>page</u>
1 Distribution of urban agriculturalists of Xochimilco, 1995.	90
2 Distribution of urban agriculturalists of Milpa Alta, 1995.	91
3 Labor characteristics of urban agriculturalists of Milpa Alta, 1988-1995.	93
4 Labor characteristics of urban agriculturalists of Xochimilco, 1988-1995.	95
5 Demographic characteristics of urban agriculturalists of Milpa Alta, 1995.	105
6 Demographic characteristics of urban agriculturalists of Xochimilco, 1995.	108
7 Comparative percentage of the number of household members and economic dependents of urban agriculturalists, 1995.	109
8 Percentage of educational levels of urban agriculturalists of Xochimilco, 1988-1995.	111
9 Percentage of educational levels of urban agriculturalists of Milpa Alta, 1986-1995.	112

10	Comparative percentage of urban agriculturalists with basic knowledge of other non-Spanish languages, 1995.	114
11	Farming systems and land cultivated by urban agriculturalists of Xochimilco, 1995.	118
12	Farming systems and land cultivated by urban agriculturalists of Milpa Alta, 1995.	118
13	Comparative percentage of type of land tenure among urban agriculturalists, 1995.	119
14	Percentages of landowning migrants and economic reasons for migrating by receiving areas, 1995.	121
15	Percentage of income provided by farming activities among urban agriculturalists of Xochimilco, 1995.	123
16	Percentage of income provided by farming activities among urban agriculturalists of Milpa Alta, 1995.	124
17	Comparative percentage of type of labor in agricultural production among urban agriculturalists, 1995.	129
18	Comparative percentage of urban agriculturalists selecting potential ways of migrating to the United States, 1995.	151
19	Comparative percentage of urban agriculturalists selecting potential areas to migrate at the United States, 1995.	151
20	Percentage of attitudes about the quality of life of each receiving area by urban agriculturalists of Xochimilco, 1995.	153



21 Percentage of attitudes about the quality of life of each receiving area by urban agriculturalists of Milpa Alta, 1995.	154
22 Comparative percentage of previous parents experience in migrating by receiving area, 1995.	159

## LIST OF FIGURES

<u>Figure</u>	<u>page</u>
1 Mexico City and the Study Communities	3

Abstract of Dissertation Presented to the Graduate School  
of the University of Florida in Partial Fulfillment of the  
Requirements for the Degree of Doctor of Philosophy

DEVELOPMENT AND CULTURAL CHANGE: MIGRATION AMONG URBAN  
AGRICULTURALISTS OF MEXICO CITY

By

Pablo Torres-Lima

May, 1997

Chairman: Allan F. Burns  
Major Department: Anthropology

This dissertation examines the migration patterns among the urban agriculturists in Xochimilco and Milpa Alta, Mexico City. These urban-rural communities participate within the largest employment market of Mexico by providing human labor in significant proportions in addition to their role as suppliers of agricultural products to Mexico City. This study assesses trends of migration from these agricultural areas to urban centers of Mexico City, to other states of Mexico and to the United States. By using the notions of regional culture and cultural systems, this dissertation contributes to the debate about the supposed explosive migration from Mexico City to the United States that is competing with the more well known sending regions of rural Mexico, and about the controversial existence of migrant syndrome in places

with a high rate of previous experiences in migrating to this latter country.

These urban-rural areas fall in the range of national average migration to other states of Mexico and to the United States. Gender, education levels, marital status, land tenure and complementary urban jobs are major determinants that influence migration from these areas to the three receiving regions. This research demonstrates that regional and international migratory strategies have resulted from the opportunities of employment and income that derives from combining urban jobs and agricultural activities. By having simultaneous roles as agriculturists and as urban workers, these urban agriculturists' world integrates two systems of cultural knowledge. One is concerned with natural resources, landscapes and agroecological processes, and the other uses strategies of urban labor. Both of them require different economic values, education and uses of time, space and culture. Thus, broader economic processes, such as the labor integration to regional and even transnational economics systems, are mediated by local knowledge, economic individual needs and cultural systems. This dissertation has demonstrated that the cultural orientation of urban agriculturalists of Xochimilco and Milpa Alta is a predominant commitment to the livelihood and social integrity of urban-rural households.

## CHAPTER 1 TERRAINS OF RESEARCH

### Introduction

It is common to think of Mexico City only as a macro urban settlement with monumental problems pushing its population toward major environmental and economic crisis. However, if one approaches this ancient city from the south, patches of rural landscapes can be seen within its urban hinterland. Some of the Aztecs' urban design continues to this day, including settlement patterns and productive activities. This is notable in the chinampa (floating gardens) area of Xochimilco and the corn-cactus belt of Milpa Alta, which still convey a classic rural environment. People, traditions, culture and economic activities bring the living heritage of the Aztecs' urban development to these towns as a part of the dynamic current urban structure of Mexico City. Today, not far from these rural areas, is the urban complex of Mexico City with its clusters of buildings, industries, markets and institutions.

The social reality of these regions is demonstrated in the interplay between the segments of rural society that are connected to both the family-based agrarian system and the urban wage economy, and to migration streams to other parts

of Mexico and the United States. My early research in 1985 and 1986 focused on the nature of the agroecological and productive imperatives and the type of socioeconomic relationships that take place in the regional agriculture in Milpa Alta (Torres-Lima, 1991). This initial effort to understand the articulation among rural populations, agriculture and urban development showed the intricacies of the relationship between employment and regional society. During subsequent periods of fieldwork in 1987 and 1988 at Xochimilco, I extended the boundaries of the research and pursued the economic and social domains of the chinampa system as a particular type of urban agriculture (Canabal et al., 1992; Torres-Lima et al., 1992; Torres-Lima et al., 1994). In my fieldwork experience with urban agriculturalists in Xochimilco and Milpa Alta, I found a diversity of cultural orientations (see figure 1).

This compendium of outlooks and voices has been largely created from a common set of cultural elements assembled by the members of these rural-urban communities. Within these regional landscapes, this assemblage includes a rich variety of labor experiences and cultural scenarios. The most notable are agricultural production, urban employment and migration. In these arenas, different community cultural systems and individual perspectives have been developed. Since the articulation between rural production and urban wage-earning have emerged within an ancient cultural context, it is important to address precisely these cultural patterns.

Therefore, the cultural orientations that affect these labor experiences of urban agriculturalists provide a crucial point of departure for the analysis.



Figure 1. Mexico City and the Study Communities

The Milpa Alta region includes 0.8% of the total population of the Federal District and it consists of 12

rural-urban towns located at the south of this city. This area is situated at approximately 19 miles from downtown Mexico City, at an altitude of 2,420 m. The yearly average temperature is 16 °C, and the annual precipitation is 746.0 mm, which allows the development of temperate farming systems. This region represents the 19.18% of the total area of the Federal District (INEGI, 1994b). Meanwhile, the Xochimilco region is situated 14 miles from downtown Mexico City, at an altitude of 2,230 m, and includes 3.3% of the total population of the Federal District. Particularly in the Xochimilco area, the yearly average temperature is 15 °C, the annual precipitation is 679.9 mm. and represents the 7.95% of the total area of the Federal District (INEGI, 1994a)

Members of these communities have struggled with persistent socioeconomic and cultural imperatives, which have been defined, enlivened and continually reshaped by the changing urban context. Currently, numerous similarities and differences between Milpa Alta and Xochimilco are found. A significant difference exists in the environmental realm. Xochimilco has been subjected to lake and swamps ecological imperatives. The chinampa farmers have met these imperatives with specific technological responses. The chinampa area is most well known as a tourist Mecca for local and international visitors, and its survival today is influenced by the economic benefits of preserving picturesque "floating gardens". While urban agriculturalists in Xochimilco deal with water pollution and soil degradation in flat lands,



Milpa Alta's farmers face constraints' resources in temperate highlands. The contrasts between these towns appear to stem from their regional landscapes. Therefore, their internal diversification of the nature and kind of human settlements, distribution and use of natural resources, and agricultural production processes lie in geographical and agroecological differences. Agricultural production in both Xochimilco and Milpa Alta face essentially the same problem in maintaining agronomic and economic strategies near or within urban concentrations. In preserving these agricultural production systems (corn, cactus, ornamental and vegetables), two advantages may be described: 1) provision of different agricultural products for home-consumption, and 2) immediate profit from the sale of the crop production in surrounding urban markets. In both towns, the maintenance of traditional and modern farming systems is part of an intensive and commercialized agricultural production. Xochimilco and Milpa Alta represent the southern rural culture of Mexico City centered on agriculture.

Most of these urban agriculturalists engage the urban-modern world in order to retain features of the ancient cultural patterns of their regional communities. Today, urban agriculturalists can earn wages in factories, work for governmental institutions, sell agricultural products at urban markets or cultivate ancient agricultural land as a typical peasant. Yet the nature of their experience is fundamentally different since they have wide-ranging

relationships that extend their regional setting. Urban agriculturalists' understanding of the regional landscape, the dynamics of Mexico City, the state, national and international economics and politics, religion, community, family, friends and self is subjected by cultural systems, which are reproduced by agricultural practices and urban routines, knowledge and language and identities of a particular regional setting. This urban-rural livelihood may not be only considered as an individual pattern. It is part of broader household strategies and community stewardship sustained by a common commitment to a family-based agrarian systems.

In this regional environment, a society has been created, one that merged diversified economic, political and cultural elements in a particular fashion. This society is difficult to locate spatially, it can not be neatly situated in either a peasant district or in a working-class neighborhood. Urban agriculturalists of Mexico City are principally sojourners who traverse regional and national frontiers as easily as they traverse the conceptual boundaries fabricated by social scientists. The cultural orientation of these urban-rural scenarios and their social structure is ambiguous and contradictory from the perspective of most theoretical frameworks.

To understand and analyze this ambiguity, this dissertation is based on the combination of two approaches to the study of development and cultural change, which are

termed community-culture and ecology-society (Schwartz, 1978). The theoretical orientation in this research assumes that culture (customary values, attitudes, beliefs and behaviors), and resulting identity are primary determinants of change within the confines of the regional community. At the same time, regional culture, including its development, is an adaptation or response to social, economic, political or material changes in the wider environment. My analysis emphasizes the links among household members, community culture and regional processes.

To study the nature of the urban agriculture framework of Mexico City requires the depiction of the distinctive types of social organization and cultural systems. This requires an elucidation of the regional realm more thoroughly than other descriptive studies of contemporary urban agriculture contexts (i.e., UNDP, 1996), which have been originated from either the perspective of urban structure or that of agricultural technology. Perhaps because conventional sociohistorical analysis depends on a clear demarcation of agrarian and industrial societies, few studies have been able to capture the dynamic interplay and complex characteristics of the urban agriculturalists' social life.

In the literature I find important contributions to the examination of similar peasant-worker societies. For instance, Holmes (1986: 91) noted that rural laboring groups that populate the large states of Latin America, Asia and Africa have been the focus of some of the most compelling

theoretical efforts to address the peasant-worker phenomenon. The latifundio and the plantation are commonly depicted as the agrarian institutions that embody a distinctive bureaucratic dimension of peasant-worker society and indeed they are depicted as the practice of industrial-urban ways of organizing resources on agricultural lands. Roseberry (1976), Wolf (1959), Carrasco (1959) and Mintz (1959) have noted that particularly at the fringes of the latifundio and plantation operations, wage-earning strategies fused with family based peasant agriculture. Eric Wolf noted the "double lives" of the peasant-worker "with one foot in the plantation way of life while keeping the other foot in the peasant holding" (Wolf, 1959:143). One important feature, however, that distinguishes the urban agriculture of Mexico City from latifundio or plantation systems elsewhere, is that these types of agriculture and communities were important components of the social formation of the Aztec empire. The Aztec empire was, of course, a societal development prior to either the plantation or the latifundio schemes.

According to Holmes (1986: 57), peasant-workers often appear in the literature as cottage industrialists, part-time farmers, return migrants and transient day laborers, with little or no regard for the agrarian pursuits of workers and the wage-earning pursuits of peasants. Holmes (1986: 57) defines the peasant-worker phenomenon as a consolidation of heterogeneous laboring groups that emphasize the diversity of

wage involvements on the one hand and the unifying influence of rural households on the other.

Moreover, the prevalence of part-time farming in the United States and other countries has increased substantially since the last forty years. It has been estimated that 92 percent of the farm families in the United States have some type of nonfarm income (Albrecht and Murdock, 1984). Both direct and indirect effects of environmental and technological factors, and sustenance diversity from both the farm and the nonfarm sectors are seen as affecting the prevalence of part-time farming (Fuller, 1984). Part-time farmers, in their efforts to secure a livelihood, continually create scale agrarian and wage-earning activities. I believe, however, that in Mexico City urban agriculturalists' features extend beyond the contours of their livelihood into community cultural scenarios and through urban institutional frameworks, which both delineate changing economic relationships. By being integrated into both rural and urban labor conditions, these urban agriculturalists are able to configure a wider occupational profile than a regular peasant or urban worker.

This ancient rural-urban labor integration is still a primary determinant of the contemporary regional culture. In Xochimilco and Milpa Alta, development and cultural change have been continuous from pre-Columbian to present times. For instance, people from Xochimilco, a city-state of the Aztec empire, worked as a aqueduct builders at Tenochtitlan, today

Mexico City. Since that time, this rural urban labor displacement has been considered as a particular migration process.

Clearly, these communities display two separate regional identities. First, they express a regional culture, consolidated in territory and around which people maintain their ethnic identity. Second, they include a migration process in which people find urban employment and still sustain a strong potential for culture change.

By studying the distinctive nature of urban-rural societies in Mexico City, I assess how this pattern manifests itself in what would otherwise be defined as an urban phenomenon in a rural setting. One objective of this research is to portray the rationale for urban agriculturalists' livelihood and their cultural systems. This is particularly clear from the standpoint of migration, in terms of the shifting interplay of sociocultural and economic reasons to migrate.

In this dissertation I argue that the process of migration among farmers of Milpa Alta and Xochimilco is based on the cultural interplay of labor integration between rural and urban scenarios. Here cultural systems are reformulated under developmental changes in the regional and wider environment. If all urban agriculturalists are involved in these regional cultural systems, at least at some point in their labor involvement, then I would expect to find no difference between migrants and non-migrants.

At the core of this dissertation are three theoretical questions: (1) What is the cultural interplay of labor integration between rural and urban scenarios in the process of migration among urban agriculturalists? (2) Why do urban agriculturalist migrate while at the same time they intensify their agricultural production? (3) How do urban agriculturalists use and adjust their cultural systems?

The research is concerned with understanding the culture of urban agriculturalists. The empirical core of this research includes concerns about 1) the significant lack of information available on urban migration, particularly from Mexico City, that may contribute to statistics and data to define urban-rural populations and their trends; 2) the proposed migrant streams from Mexico City to the United States that may be now competing with the more well known "sending regions" of rural Mexico (Cornelius, 1992); and 3) the argument that communities with historical experience in migration to the United States tend to do so as a part of their culture (Rothstein, 1988). Analysis of the process of migration requires the portrayal of ethnohistoric elements, socio-demographic characteristics and cultural systems of the communities of urban agriculturalists, without which this contemporary ethnography could not be written.

Research IssuesRegional Culture and Development of Agricultural Communities of Mexico City

My dissertation is founded in the principle that the spatial distribution of agricultural communities in the urban region of Mexico City and their subsequent evolution of, or preservation of, various cultural or subcultural characteristics may best be understood as concurrent developments that are both part of larger events. Thus, these agricultural communities are not intrinsically rural or urban. Rather they are part of an ancient system of urbanization. Particularly, urbanization in Mexico City is a major spatial and economic process that not only has important ties outside the regional setting, but also includes complex social aspects in the local setting. For instance, in Xochimilco and Milpa Alta, urban agriculturalists have been routinely and systematically part of multiple contradictory forces within the urbanization process. These villagers have not changed their patterns of living because of urbanization, but they have changed because constraints on their culture have been modified. Social and defensive responses of this kind of urban dwellers in the regional context are adaptations not to urbanization, but to a particular position in a cultural and socioeconomic situation that happens to have been enforced geographically.



A region may be considered as interrelated human activities and the process by which these interrelations become spatially structured in the course of history (Van Young, 1992). This concept of region assumes that regional activities cluster in space. The region as a unit of analysis implies an attempt to study societal processes in their entirety. In this view, spatial aspects of societies are determined primarily by the relations within and among groups which constitute a society. Recently, Lomnitz-Adler (1991) defined the term region as a space composed of internally homogeneous zones interconnected through the logic within which one is regionalizing (i.e., culture, production, commerce, etc.), and where the systems of interconnections (regional system) are thought of as a hierarchy. Thus, region and regional can be inferred as analytical categories in studying cultural development in social and geographical spaces.

By using the concept of region as an analytical construct to study cultural strategies, one is able to capture the process by which knowledge functions as a form of power and disseminates its effects (Foucault, 1980). Regional territory is an arena of interdependent confrontation by certain kinds of power; this arena is the space of discourse that serves as a domain and an object of economic relationships, political practices and cultural systems. This interdependent system itself has been based on systems of unequal exchange of goods, labor, resources and capital.

Long-term historical processes of societal change have resulted in socio-political and economic structures with inequalities in access to services, resources, and so on (Hilhorst, 1990). In the agricultural regions of Mexico City, the disequilibrium between social development, community cohesion and environmental conditions can be seen as a result of the unequal exchange between urbanization processes and regional settings.

Using the framework formulated by Rollwagen (1979), this dissertation is based on the notion that cultural systems are defined as any set of people who share in and elaborate a common behavioral system by contrast to other sets of people. By studying urbanization. Rollwagen (1979) reported that because various regions in Mexico participate in the national and international economy differently and in varying degrees, individual villages may be contrasted as a result of their incorporation into a hierarchy of cultural systems within which they occupy particular spatial arrangements. An examination of cultural systems must include the overlapping of the infinite number of continually generating cultural systems and the constantly changing hierarchical relationships between cultural systems which result from differential access to a wide variety of regional resources that grants them power differentially.

Within these processes of unequal exchange, the dissemination of power may be carried out through regional institutions and organized systems of communication that

represent networks of information and cultural knowledge. These institutionalized structures of power, principally located on governmental spheres, markets and the local social organizations, are interconnected in the dispute and control of the spatial use of regional resources and social dynamics. In the agricultural areas of Mexico City, the main regional resources in dispute between these institutions and regional community organizations have historically been the land.

In both towns, Xochimilco and Milpa Alta, there are ancient terrains on which the inhabitants have drawn their livelihood, forged their social relations, and crafted their religious practices and political experience for centuries. Through the history of these communities and across their landscapes, different political rural-urban movements have redefined the assumptions underpinning their rural character of regional societies. Life in the agricultural regions of Mexico City has always been determined by their relationships with different cultural systems and external forces. Also, these relationships have been developed under conditions of permanent conflict with the urban forces to preserve regional resources, agricultural and other economic activities, and cultural and geographical spaces.

In the last twenty years, facing urbanization processes, legal actions and economic events promoted by the state and private sectors, political disputes about the future of the agricultural regions and their culture have been raised. In 1979, the political movement of the *Comuneros Organizados de*

*Milpa Alta* (COMA) faced governmental urbanization policies directed at their forest lands. The movement attempted to defend communal lands, democratize the community assembly, and defend cultural heritage. The impact and goals reached by this movement resulted in governmental recognition of the political capacity of this community. The Coordinadora Nacional Plan de Ayala, the more powerful Mexican peasant organization at that time, defined the COMA's demands as a political movement of urban commoners of ethnic origin (Torres-Lima, 1991).

Recently, ejido expropriation and urbanization programs in Xochimilco in 1992 reduced agricultural land and the weakened urban agriculturalist organizations. However, an ideology that opposed urbanization trends became an important community manifestation that the government had to contend with. As a result of this effort, urban agriculturalists implemented a series of projects and actions to reestablish agricultural production, income, and social welfare levels such as an agroecological chinampa museum in San Luis T., agricultural cooperatives, market associations, and cultural centers.

These political actions have introduced new moral principles and rural-urban social relations into the agricultural production. These political movements achieved stunning mobilizations of the local people and took place in the midst of an enveloping urban crises, which were both economic and political. These crises have affected the

regional development of industry, commerce, infrastructural investments and the delivery of public services.

I believe that the political and economic movements were aimed at redefining the spatial and social relations through a revoking of the land tenure in both Xochimilco and Milpa Alta. Thus, the theoretical significance of these movements rests on the primacy of cultural forces in shaping social and political struggles within urban-rural scenarios. The communities responded through struggle with federal and local governments. They have developed proposals, coalitions, actions, and strategies. The creation of projects involves the recognition and validity of the social groups and cultural systems diversity present in these regions. Social resistance has preserved cultural spaces and assured the community's continuity. Moreover, these social responses and cultural productions are based on an historic-ethnic identity, which has included adaptation to a wider society and the participation of community members in the control of their agricultural and urban-rural regional territory.

Garcia-Canclini (1993) understands cultural production as the creation of phenomena, beliefs, values, ideas, behavior and practices that contribute mechanisms of social reproduction. Cultural production also develops and transforms the social system and the material structures engaged with the production of meaning and social change. The study of cultural production should therefore focus on the process of material production; and the social circulation of

objects; and meanings that different recipients attribute to them (Garcia-Canclini, 1993). The complex process of extension and transfer of objects and meanings may be revealed by patterns and norms of interpretation and reformulation of the social systems and their regional space. Thus, symbolic representation of the social and economic organization and its context are associated with specific cultural knowledge and its regional setting. For instance, the cultural knowledge of migration and technological knowledge of agriculture among the urban agriculturalists have been the means for social continuity and struggle for regional power.

Through the process of unequal exchange with the urbanization processes of Mexico City, these urban agriculturalist communities have had to survive by reproducing and reformulating the conditions of cultural systems and the social spaces they occupy (Lomnitz-Adler, 1991). Therefore, the socio-cultural continuity of agricultural communities in Mexico City is not only the reproduction of the life-sustaining activities (either urban or rural) in community and family, but the social transmission of reformulated cultural and economic behaviors to the new generations.

Lomnitz-Adler (1991) noted that regional culture includes the creation of new meanings that depend on objective relationships (frames of communication) and on how the symbolic exchanges produced in these relationships are

perceived and understood (culture, ideology and identity). Thus, a regional culture include the construction of frames of communication within and between the various identity groups. By sharing a temporal and spatial experience as well as a set of cultural understandings about that position, every social group occupies a specific place in the regional culture (Lomnitz-Adler, 1991). For instance, the spatial dimensions of cultural understanding among the urban agriculturalists and the manipulation of their regional and community identities depends on the juxtaposition of several kinds of relations, both rural and urban, between culture and spatial systems, such as economic, political and social. Because of the geographical location of Xochimilco and Milpa Alta in the regional context of Mexico City, many members of these communities have been quite adept in adapting to the dynamic of urbanization and their agricultural activities. Methodological analysis of these urban-rural territories implies a dynamic consideration of the tensions and contradictions within the regional context in which population trends are major determinants. For instance, migration patterns may show the cultural and social intersection of an urban and rural economy.

The urban agriculturalists of southern Mexico City see themselves neither as farmers nor urban inhabitants, but as the unity of both in one according to the internal cultural and social requirements in this geographical space. Answering to what may characterize his social status, either urban or

rural, an informant from Milpa Alta portrayed his daily life in these words,

pues mi trabajo en el día es en la ciudad, soy urbano  
pues, pero en las tardes me voy a la parcela, trabajo un  
rato y luego a descansar. También trabajo los fines de  
semana en mi nopalera y luego el maicito y ahí la llevo.  
Yo creo que soy de las dos cosas [urbano y rural].

at morning my job is in the city, so I am urban, but at  
evening I go to my agricultural plot and work for a  
while, after that I take a break. I also work weekends  
in my cactus field and later in my corn field, and so  
on. I think, I am both things [urban and rural]

(interview, October 1995, Milpa Alta resident).

By studying these cultural patterns in the social reproduction of the urban agriculturalists in Mexico City, many of the situational variables used to predict or explain cultural and economic responses are found at the household unit of analysis. Variables such as socioeconomic status, landholdings, migration to wider regions (typical urban centers of Mexico City, other states of Mexico and the U. S.), household composition and others can be seen as operationalized observations of culture and social structure. We agree with Pelto and Pelto (1975) that by using households as the basic units of observation we can understand differential processes of social and cultural change under intra-community and intra-regional diversity.



Regional land and social structure provides the material basis for flexible and important social networks and multistranded economic relationships. These relations can be explained with a social theory that describes the human being as identified with a group and as motivated by the interests of the collectivity (household, clan, class, nation-state) (Wilk, 1990). For instance, the economic relations of reciprocal exchange of goods and services (information, job assistance, loans, services, moral support) are intertwined and partly camouflaged by kinship relations. Thus, the household may function as a reciprocity network where this exchange is a protective structure, a design for social and economic survival (Lomnitz, 1978).

By analyzing household structure and organization in the regional perspective, we can observe how the specific functions fulfilled by individual household members directly affect the economic and social structure of rural-urban units. For example, in the chinampa area the variation in the degree of economic household incorporation into regional spheres and community relations are based on a combination of on and off-farm activities; the degree of family member plus hired labor participation on the farm; the technological levels to manage the three essential chinampa components of water, soil and biological resources; and levels of expenditures for farm and housing needs (Torres-Lima et al., 1994). If we recognize that the family household is the major corporate social unit for mobilizing agricultural labor,

managing productive resources, and organizing consumption (Netting, 1993), the dimensions of the structure and organization of households may reveal the nature of uneven regional development and its consequences, not only on particular households but also on particular individuals within households. However, it seems that regional cultural determinants will bring together these economic and technological relationships into historic patterns and associated probabilities of change and development.

In agricultural regions of Mexico City, family contexts have been reproducing the forms of labor organization and technological inputs around agricultural production. Moreover, the structure of the regional culture is based on organizational patterns within the multigenerational family. Urban agriculture is the consolidation of cultural networks among regional space, family and community. Therefore, the struggle to adapt to processes of change caused by urbanization has been carried out not only for technological or economic reasons pertaining to agricultural activities, but also because of the desire to defend a cultural space, a shared territory where relationships with nature and among social groups are consolidated. However, the current regeneration of these spaces is permeable to several urban processes of change.

The families and their members have incorporated urban behavior patterns as a result of their closeness with the city. Urban activities and agriculture have been combined as

an economic and cultural unit whereby the inhabitants maintain their living standards. The access to urban employment and higher education have stimulated the local economy and opened new technological expectations for agriculture, as well as stimulated recent forms of cultural and social participation within the region. The cultural knowledge developed in agricultural regions of Mexico City is culturally compatible with the evolution of the urban regional society and its immediate context. Nevertheless, local knowledge, agricultural production and labor productivity in these areas have been maintained or modified on the basis of exchange of agricultural produce and urban surpluses. Within this exchange, technological heritage is still a syncretism of traditional and modern practices to manage regional natural resources and external inputs from the city. Nevertheless, the modern practice of the regional agriculture implies an updated cultural relationship with the urban environment. Particularly, chinampa agriculture as a modern tradition synchronizes specific forms of social organization, modes or organizing production, traditional community landholdings, technical skills, and formal training, which constitute the "chinampa stewardship" (Torres-Lima et al., 1994).

Current Migration Trends and Mexico-United States Integration

Despite the fact that labor migration can be primarily considered as a spatial process where people move geographically to meet economic needs, current interregional and international migration patterns are also the result of other forces. Migration consists of deliberate responses to relative opportunities at alternative places of work or home, whether those opportunities are limited by exploitation and misery or expanded by institutional differences, economic growth, or social and political change (Conroy et al. 1980: 9). A good example of this is the migration of American Indians to cities in the United States. Despite the fact that urban Native Americans comprise the majority of the Indian population in the United States receiving only less than 1% of the total Indian health budget, these people are still migrating from their reservations due to the necessity of finding work to support their families, with a 30% migration increase over the last three decades (Carr, 1996).

Today, migration processes facing close economic and social integration among regions, states and countries are generally embedded in long-term relationships. For instance, historical developments, economic, sociocultural and political structures between Mexico and the United States, international division of labor, population dynamics and patterns of individual economic behavior have combined to produce the current the creation of new transnational migrant

communities (Portes and Bach 1985). Of Mexico's migrant streams, urban inhabitants are strongly susceptible to these current transnational processes. Urban migrants appear to be the strongest labor migration stream emerging at the end of this century.

International migration between Mexico and the United States has emerged not only by the existence of emergent compelling social and economic factors in Mexico but also by strong historical ties of territorial integration between these two countries determined by economic development and conditions of labor demand and supply since the middle 1800s (Martinez, 1957: 92; Cardoso 1980: xiii). While it is often thought that migration from Mexico to the United States is a one way process, Mexico is also at the receiving end of migration.

Today, the Mexican - United States labor migration is the world's largest, involving some three million people annually (Monto 1994: xiv), and people migrating from the United States to Mexico represent 75% of the total international migrants that the latter country receives (INEGI, 1995). Moreover, the Mexican - United States border of Tijuana-San Diego includes a flow in both directions of 60 million people crossing legally every year, which makes it the most intense border of the world (Garcia, 1993). Territorial and economic relations between Mexico and the United States have increasingly encompassed other important dimensions besides labor, such as trade, capital, industrial

issues, and cultural products, which are important components in the economic agenda of both countries (Weintraub et al., 1991). In any case, flows of both people and money are concentrated regionally and by sector in both countries. The way to think about migration relations between Mexico and the United States should include the economic and geopolitical relations between countries of unequal development and job opportunities (Sassen, 1992: 18).

By studying flows of the United States investment in Mexico and Mexican immigration to the United States, Ronfeldt and Ortiz de Oppermann (1990) noted that these two economic processes may be good or bad for both countries. Pastor and Castañeda (1988), cited by Ronfeldt and Ortiz de Oppermann (1990: 3), stated that there is no reason to seek the regulation of one flow (of manufactured goods or investment) without seeking the corresponding regulation of the other flow. In any case, flows of both people and money are concentrated regionally and sectorally in both countries.

Lowenthal and Burgess, (1993: 243) stated that the deepening of interdependence between California and Mexico reflects broader trends in the global economy. Technological advances in transportation and communications have made it much easier for capital and labor to cross national frontiers in search of economic opportunity. Internal and regional economic differentiation between Mexico and the United States may be defined as a development matter within a transnational context. However, not only is the integration between Mexico

and the United States subject to economic forces, but there are important cultural processes occurring at transnational level as well. This cultural penetration is the result of movement of people, economic models, circulation of materials, cultural products and ideas. Our approach is to identify the determinants of emigration from the urban agricultural regions and on regional development that includes cultural processes and economic integration between Mexico and the United States.

Recently, migrants from other parts of rural Mexico are being attracted to the United States in growing numbers. These migrants, unable to find Mexican urban jobs even in the informal sector of the economy, are attracted by economic advantages in the United States that are derived from high-growth demand of labor. The increase in low-wage jobs in the United States has been in part a result of the same international economic processes that channeled investment and manufacturing jobs to low-wage countries. Since the primary generators of low-wage jobs are the major growth sectors of the United States economy, such as technology and services, the supply of such jobs and the need of low-wage labor will probably continue to expand. Therefore, the influx of immigrant workers who gravitate toward these jobs is likely to continue as well (Sassen, 1992: 18). Economic considerations, such as the potential of income above the level of subsistence, are influencing social behavior of city dwellers. However, income differentials in these two

countries may matter less in the calculation to the migrate of stay than the direction of economic hope or economic conditions at home of improving or deteriorating income (Diaz-Briquets and Weintraub 1991: xii).

Low levels of economic development alone do not necessarily promote migration into the United States. By studying the impact of the devaluation of the *Peso* in 1975 on temporary migration from Mexican to the United States, Conroy et al. (1980) postulated that migration did not represent an obvious preference for the majority of Mexicans since domestic alternatives for Mexican migrants display composite indices of conditions which were in fact very comparable to those of the border areas of the United States. Despite the fact that low levels of economic development do not necessarily promote migration into the United States, once it has been demonstrated that historically countries with a certain level of development (i.e., Ireland) or high gross national product (i.e., South Korea and Taiwan) are still places from which people emigrate, Diaz-Briquets and Weintraub (1991: xi-xii) noted that clearly the economic spheres dominate (Diaz-Briquets and Weintraub, 1991: xi-xii). Mexican migration to the United States is more concerned with the possibility of achieving higher income, rather than the outlook for steady employment, better housing, education, and health services (Monto, 1994).

Migration relations between Mexico and the United States have several spatial and political dimensions that are often



focused in terms of specific port of entries, state-wide and national. Due to the nature of the Mexican political system, any border issue is a question of international character. For the United States, though, not all border issues are a federal subject (Rico, 1993: 241). Thus, it is expected that migration connections are treated differently between these countries. However, one dimension of the decision-making dilemma around migration relations between Mexico and the United States is a bilateral interaction between the federal authorities of these two countries. To reduce emigration pressures on the United States, economic policies have identified strategies of development of the sending countries that can be implemented cooperatively between the countries involved. Thus, the approach has been to identify the determinants of emigration from the region, and regional and sectorial economic developments that may provide alternatives to emigration (Diaz-Briquets and Weintraub 1991:5). However, the accelerating process of international economic integration between Mexico and the United States worsens the development and applicability of social and economic policies.

In short, understanding the link between regional development and migration trends among urban agriculturalists to Mexico City, to other states of Mexico and to the United States requires intimate knowledge of social and cultural conditions. The central issue in many theoretical models and studies of migration has been the economic differences in

real wages available at alternative destinations for potential migrants (Conroy et al. 1980: 10). Focusing on broader set of socioeconomic and cultural variables, it is a possible to demonstrate current adaptive migration strategies of urban migrants.

### The Study Areas and Research Methodology

Though issues of regional culture and migration are important, a sufficient account of the urban agriculturalists dilemma must go beyond the characteristics of the urbanization processes and their impacts to the social context of these communities. My anthropological approach has been to start to demarcate the general context of these populations prior to description of the methodological focus used in this dissertation.

### The Urban Agriculturalists of Xochimilco and Milpa Alta, Mexico City

Historically, the north region of the American continent has been a geographic space where territorial and environmental diversity has given rise to an extraordinary degree of sociocultural variety and differences in economic development. Intra-regional migration has been an regular pattern among the people. According to the mythology, the imperial Aztec city of Tenochtitlan (today Mexico City) was founded by people who migrated from northeast to south. Since the first settlers in North America, and later the European,

African and Asian migrations, high degrees of movement of people have also characterized this region as one of the most ethnically diverse in the world. Cosmopolitan cities such as Mexico City, Los Angeles or Montreal, are composed of many ethnic groups that have migrated from rural areas for other countries.

Recently, people from other parts of rural Mexico have been migrating internally to the urban destination of Mexico City. This same migrant stream also flows to the United States. Urban agricultural communities of Mexico City have migrated since the Aztec era to centers of the same city and to other outside regions. The agricultural land and communities, such as the chinampas, have been closely linked to urban regional growth and development of Mexico City (Torres-Lima et al., 1994). However, current migration from these urban-rural areas to urban centers of Mexico City, to other states of Mexico and to the United States is relatively unreported in the migration literature, yet these migrant streams may be now "competing" with the more well known 'sending regions' of rural Mexico such as regions of Michoacán or Jalisco.

In the Mexico City metropolitan area, population growth in the period of 1950 to 1980, which represents 38% (Ward, 1990: 33), was due to the city-wide migration. Since then, its economic and political centralization, and the implications of its spatial urbanization processes are seen as questions of national economic development and social

equality. However, to assess these issues requires also taking into consideration the analysis of non spatial factors such as social organization and cultural patterns. The outlook of both approaches provides the background to the discussion of migration and cultural processes and economic development. The common core of migration theory is permanently enriched by wide diversity of regional and methodological cases. By studying two urban-agricultural cases of Mexico City, we can document precisely the cultural variability that exists in this theory. Xochimilco and Milpa Alta, as two of the old *pueblo* cores in Mexico City that had not been completely absorbed by the city's growth, since the 1960s are considered as reception centers for internal and countryside migrants and at the same time sending regions of migrants to Mexico City and to the United States.

These communities of urban agriculturists have been part of the urban-rural dual way of life in the Mexico City region for centuries. The sites for this research are the regions of the Xochimilco lagoons (including Xochimilco, San Gregorio A. and San Luis T.), a community of 271,151 inhabitants, and the nearby edible cactus (*nopal*) producing communities of Milpa Alta (including Villa Milpa Alta, Santa Ana T., San Lorenzo T., San Pablo O., San Francisco T., San Gerónimo M. and San Juan T.), with a population of 63,654 (INEGI, 1994a; INEGI 1994b). Currently, Xochimilco and Milpa Alta represent 15% and 35% of the total agricultural area of 27,847 hectares that were cultivated in 1993 in the Federal District of

Mexico City (INEGI, 1994a; INEGI, 1994b). These people have historically interacted with urban markets of land, food and labor in Mexico City. Since the late 1970s, migratory movements of rural and urban people moving to Xochimilco and Milpa Alta have promoted more urbanization processes. For instance, 21% of the total population of Xochimilco in 1980 were migrants from the countryside of Mexico (Canabal et al. 1992: 80). These demographic pressures have resulted in over-use of natural resources, a decrease of agricultural regional employment, and accelerated competition for local economic possibilities.

These communities of urban agriculturists have also been either forced to migrate or taken advantage of transnational migratory strategies in other historical periods. For instance, since Milpa Alta was a strategic bastion of the *Ejercito Libertador del Sur*, as soon the federal army took control of the region in 1916 the male population was forced to migrate to the states of Morelos, Guerrero, and Mexico City. From 1910 to 1920 the Milpa Alta's population war-time loss was from 16,268 to 10,029 (Torres-Lima, 1991). Most notably, urban agriculturalists of Xochimilco and Milpa Alta participated during the *bracero* program from 1942 to 1964. The central hiring office of the *bracero* program was in Mexico City in the early period of the program. Previous experience in transnational migration to United States as well as internal migration to Mexico City and other states of Mexico have stimulated and opened new economic and cultural

expectations for urban agriculturists within the regional, national and transnational spheres. In this dissertation, we determine the extent to which there is a "culture of migration" exists among urban agriculturists in Mexico City, and to where migration is targeted, to other states of Mexico and the United States, and if it fits in the well-known system of geographical movement and life-cycle choice.

The migration process of urban agriculturists was reinforced by the 1995 devaluation of the *Peso* and the subsequent emergency policies aimed at adjusting the national economy of Mexico. Increasing the ratio of United States wages to Mexican wages and decreasing job opportunities in Mexico City are forces pushing people into migrant streams. Recently, Cornelius (1992: 161) found in a survey that at least one out of ten Mexican migrants entering the United States clandestinely come from the metropolitan area of Mexico City.

On the other hand, González-Aréchiga (1992: 342) reported that people from Mexico City crossing the border without legal documents had the lowest participation percentages because it is very far away from the border. Neither authors (Cornelius, 1992: 161; González-Aréchiga, 1992: 342) reported the place of birth for the population surveyed, which may refer the original sending region of migration instead of the last place of residence that may have been Mexico City. Nevertheless, urban migration is still important to evaluate since current urban agriculturists'

behavior shows that there is not a uniform pattern of migration. There are variations depending on economic needs, social networks and job experience. Migration trends among urban agriculturists of Mexico City have their own dynamic and historical continuity, and their relationship with any other socio-economic change is likely to be multidirectional rather than isolated.

#### Methodological Fieldwork Considerations

The methodological advantage of studying regional and international movements of people from specific communities is that it eliminates the problem of economic reductionism by incorporating socio-demographic and cultural components into the analysis of labor migration processes. It also provides the advantage of bringing national systems back into the analysis without requiring the study of entire global economic trends and international labor circulation. By describing particularistic migration patterns in these communities integrated with larger national structures, we enrich the possibilities for understanding structures and designing policies that may be both culturally congruent and effective. This research meticulously compares and applies migration strategies and ethnographic reality to our understanding of transnational way of life between Mexico and the United States

The regional cultural system, as a single theoretical and methodological framework, allows the inclusion of

heterogeneous laboring individuals with a high degree of diversity of job involvements and rural components. The challenge posed in including several migrant contexts is emphasized here by taking advantage of an anthropological focus on local settings, and by paying attention to the diversity of the communities of migrant urban agriculturists and relevant variables that determine their migratory strategies. The simultaneous integration of urban agriculturalists in more than one cultural system involves knowledge of the job alternatives; and the actors are able to explain their reasoning. The range of possible migratory strategies in Xochimilco and Milpa Alta communities is informed by individual needs, resources and decisions within regional, national and international forces.

In choosing alternatives for migration, urban agriculturalists do not make complex calculations, but rather tend to use cultural and economic elements that simplify their decision making. In terms of socio-economic and cultural choices of individuals to labor market constraints, this study used two units of analysis: the regional context that affects and promotes migration responses, and the household sphere where decision-making processes occur about migration strategies.

This dissertation is based on research that began in 1985 and has continued through 1995. Intensive fieldwork in 1995 lasted from July until November. I surveyed a demographically stratified random sample (by age, sex, and



location) of 185 people in Xochimilco and 98 in Milpa Alta, with a 92 and 90 percent level of confidence, respectively, by using the agriculturally active population as a universe.

Because in Mexico City migrants and women are the workers most vulnerable to contractions in the labor market (Ward, 1990: 23), and since women make up almost half of all legal migrants from Mexico (Sassen, 1992: 16), our research efforts integrated a gender perspective by considering the female and male population ratios as described in the census of 1990.

The surveys consisted of 53 questions with 106 items (see appendix) aimed at documenting urban agriculturists movement within the city of Mexico, migration to other states of the republic of Mexico, and migration to the United States. Although information about the receiving towns or areas was recorded, migration patterns were determined from the sending area.

I also did in-depth interviews with 23 individuals from those urban agricultural communities, purposefully chosen to be older (more than 55 years old) than the stratified sample of the general population so that we would be able to interview more specifically about migration strategies they used over their lifetimes. These data are used to capture the migration experiences during the "bracero program" era. Hence these interviews portray an important component of the possible existing migration culture among urban agriculturalists.

Both survey and in-depth interviews were open-ended queries about migration knowledge, migration pressures, and reasons for migrating. These were compared with data gathered by the surveys on demographics, family income, education levels, and tenure, agricultural production, employment histories, and cultural acceptance of immigration.

### Dissertation Outline

This dissertation is divided into seven parts. The first chapter examines the terrains of the present research in terms of the conceptual stage and theoretical basis for the dissertation. The second chapter describes the general context in which environmental and regional culture interactions are analyzed from an ecological anthropology standpoint. The third chapter establishes components of the natural environment and the ethnohistoric accounts of urban agriculture in southern Mexico City. The ethnohistoric review presents the particularities of the specific urban agriculturalists communities where the research was done. The migration patterns among urban agriculturalists is the theme of chapter four. Urban agriculturalists consider that migration is an external process, which means leaving their geographical territory and cultural space to outside locations as Mexico City, other states of Mexico or the United States. This chapter describes the respective regional and international migration trends. The fifth chapter presents the sociodemographic and agricultural

characteristics of urban agriculturalists. It incorporates economic data related to income and employment in order to demonstrate the relationship between migration and economic considerations. Chapter six discusses how quality of life and cultural strategies among urban agriculturalists shape their migration profile. It also analyzes the cultural systems of these communities that constitute important component of their livelihood. Finally, chapter nine presents the conclusions of the dissertation in regard to the development and cultural changes which impact the urban agriculturalists of southern Mexico City.

## CHAPTER 2 ENVIRONMENT AND REGIONAL CULTURE

### Introduction

The interaction between humans and their environment has been a central issue of anthropology, specifically of cultural ecology and ecological anthropology. Social organization and cultural patterns have been mediating the relationship between human activity and environment. However, this relationship is largely complex and contradictory. The social and ecological configurations in each cultural system evaluate the critical processes which will determine the final societal development. The spatial dimension of cultural processes and environment is a theoretical and methodological framework which has been used by anthropologists in studying developmental transitions in societies.

Within the analysis of spatial human-environment interactions, construction of theoretical schemes of regional studies may be useful and involve different spatial dimensions. Without doubt, the relationships between cultural systems and environment and ecological processes have regional expressions.

Currently, the processes that occur dynamically in modern societies are testing the vulnerability of social

groups and ecological systems to respond to cultural and environmental changes. Van Young (1992) noted that regions as analytical constructs have a notable power in explaining the relationship among three key variables in the human sciences: sociocultural change, space and time. Thus, the theoretical and practical issues of regional studies may illuminate the social and ecological variation which allows us to evaluate particular hypotheses concerning local populations (Ellen, 1979).

Using the chronological framework postulated by Orlove (1980) and Halperin (1989), regarding the stages of the development of ecological anthropology, it is possible to examine the concepts and approaches applied for studying the spatial-regional interaction between the environment and human beings and their culture under these major schools of thought. Including their periodization, these are: a) Cultural ecology, from about 1930 to 1960, b) Neofunctionalism, from 1960 to the early 1970's, and c) Processual approaches, late 1970's to present. In this dissertation, it is important to discuss how the focus and the basic concepts of cultural and ecological anthropology used by each school of thought may be applied to understand the spatial variations of cultural systems and environmental processes which are involved in the strategies of development and cultural change of urban agricultural communities located at south of Mexico City.

Human-Environment Interactions in Ecological AnthropologyEnvironment and Culture, the Setting for the Region in Cultural Ecology

Cultural ecology, as developed in the period 1930-1960, represented a new synthesis of, and a further development upon, materialist evolutionism. Its main intellectual proponent, Julian Steward, noted that specific cultures evolve their specific forms in the process of adaptation to specific environmental conditions, and that the apparent uniformity of evolutionary stages is actually a matter of similar adaptations to similar natural conditions in different parts of the world (Ortner, 1984). Thus, the primary use of the adaptation concept was in explaining the evolution of culture in general. The first approximation to define this process of adaptation to specific environmental condition was the culture-area concept which was originally developed by Ratzel, Mason and further by Wissler. However, the relationship between environmental and cultural variables for the same region was first systematically examined by Kroeber (Ellen, 1982). Kroeber's work on cultural and natural areas of native North America implied an early concept of cultural region. Kroeber (1963:82) explained that each class in a society exhibits a more or less distinct phase, a subculture, of the total culture carried by the society; just as geographical segments of the society manifest regional aspects of the culture.

The culture-area concept devised chiefly by Kroeber maps whole cultures, or at least a range of diagnostic traits extending beyond technology, on the habitats exploited by primitive people. In culture-area theory, habitat influences human behavior as a result of the use a society makes of the resources in the natural setting (Honigmann, 1976:288). Nevertheless, it is noted that if culture-area had been considered as a concrete entity *sui generis*, rather than simply an analytical construct, three problems had been found. First, areas with a common cultural content may have very different social forms, and similar social forms dissimilar cultural content. Secondly, environmental correlations with cultural variables are diverse and not all of the same order. In each situation or area different natural factors are likely to be impinging on culture with different intensity. Third, because the problem of stasis is intrinsic to the method, sequential and spatial variation within culture areas are difficult to portray (Ellen, 1982:24).

Perhaps the most important contribution of Kroeber's work on regionalism was the consideration that relation between culture and environment may be spatially defined.

Kroeber's premise is based on the geographical distribution of culture which is molded by the environment but it is not caused by it. He recognized a general correlation between culture areas and natural areas but viewed the correlation in terms of what culture features a

natural area would or would not permit (Hardesty, 1977:5). The emphasis placed by Kroeber was on unique culture histories and unique cultural patterns (Vayda and Rappaport, 1968:483).

On the other hand, Steward's work in ecological anthropology was influenced by the Boasian school and also by Kroeber. The approach of Julian Steward improved on the environmental possibilism in at least two ways. First, he broke down the environment and culture into specific features to examine their interrelationships. Second, he viewed the environment not simply as setting vague limits but rather as intimately related to aspects of culture (Jochim, 1981:7). Steward attacked both the focus on the evolution of culture-in general and the lack of a more systematically operative evolutionary mechanisms.

Steward's method of cultural ecology "entails the study of the relation between certain features of the environment and certain traits of the culture possessed by the sets of people living in that environment" (Orlove, 1980:237). Steward defined three fundamental procedures of cultural ecology: 1) the relation between environment and productive technology, 2) the behavior patterns involved in the exploitation of a particular area by means of a particular technology, and 3) the extent to which the behavior patterns entailed in exploiting the environment affect other parts of the culture (Vayda and Rappaport, 1968:484). Although the research strategy proposed by Steward is all the more



striking if one considers its historical backdrop (Moran, 1982:43), the only explicit reference to region is again concerned to a particular area, as Kroeber did, or to a specific territoriality of certain societies.

Steward's contribution on local environments consisted that neither environment nor culture is a given but that each is defined in terms of the other, and the idea that environment plays an active, not just a limiting or selective, role in human affairs (Hardesty, 1977:9). Steward's ideas were linked to an explicit notion of cultural evolution in which ecological relationships were seen as part of a network of cultural adjustments and adaptations. Rather than suggest simple correlations between social form and habitat, as Kroeber did, Steward attempted to demonstrate the functional relationship between such things as population density, economic arrangements, agricultural output, technology, settlement patterns and social organization (Orlove, 1980; Ellen, 1982; Moran, 1982). Steward's emphasis on culture as the unit of analysis, his interest in cultural evolution and his partitioning of culture into technological, social, and ideological components gave him a materialist standpoint (Orlove, 1980).

In conclusion, by correlating environment and culture, Kroeber did not suggest, as did Steward, that similar combinations of environments and technologies tend to be functionally and causally related to similar social organizations. Kroeber was concerned, contrarily to Steward,

with correlation rather than explanations, with passive rather than active role for the environment. Therefore, he was concerned with classification rather than process (Ellen, 1982). Nevertheless, neither of these authors explicitly states how the spatial-regional variation of social organization and culture is related to similar or different environmental conditions.

The cultural ecology approach allows us to use some conceptual elements in this dissertation. For instance, the consideration that the relation between culture and environment may be spatially defined refers the process in which specific cultures evolve and adapt to specific conditions. This specific territoriality influences the historic and spatial variation of societal development, which is an important concept when we want to explore cultural change in a particular natural setting.

#### Ecological Systems and Anthropology from Neofunctionalism

Another variant of cultural ecology which came to dominate the materialist wing of the sixties was neofunctionalism. In this decade the studies shifted from how the environment stimulates the development of social and cultural forms to the question of the ways in which social and cultural forms function to maintain an existing relationship with the environment (Ortner, 1984). The work in ecological anthropology, that stressed the holistic viewpoint in an ecosystem approach, considered that any aspect of

culture (i.e. a particular ritual, the selection of marriage partners, or the method of farming) may be related directly to some features of the environment (Jochim, 1981:7). Basically, the functionalist approach considers the social organization and culture of particular populations as functional adaptations to their environment. These adaptations allows the populations to exploit successfully their natural environment without exceeding its carrying capacity. By emphasizing the survival and reproduction of populations, and therefore prioritizing population pressure as one of the most important mechanisms of change, this approach adopts local populations rather than cultures as its main unit of analysis. The strong systems orientation and the adoption of concepts from biological ecology such as adaptation, carrying capacity and niche, have been used to link energy use, food production and population size (Orlove, 1980).

In his early work, one of the most important scholars of this approach, Vayda (1968), noted that the main relevance of ecological studies to cultural anthropology derives from the fact that the behavioral as well as the physical traits of organisms are important in their relations with their environments. He noted (Vayda, 1968:5) that by showing connections between such behavior and the environment of the behaving people, we help to make cultural practices intelligible and, in doing so, we are meeting basic objectives of cultural anthropology.

Therefore, the functionalist emphasis is to define the relation between cultural and environmental phenomena and designate it as a "system". The assumption is that these systems with interacting cultural and environmental components are generally the products of processes of evolutionary selection. In this statement, it is possible to track a neoevolutionist trend within the neofunctionalist school. The ecosystem concept provided a conceptual framework more satisfactory to some scientists than the behavioral/social structure equation stressed by Steward. By using human population as parts of ecosystems, attention may be paid to human adaptability (physiological, cultural, and behavioral).

The research strategy of ecological anthropology under this approach is to study a wide range of human responses to environmental problems, to social constraints, and to past solutions to environmental problems (Moran, 1982:54). In general, this contemporary perspective has been concerned with the nature and operation of the cultural environment system. Thus, the relationship between the environment and cultural behavior has been understood as the study of systems succeeding one another, which can contribute significantly to the understanding of the change of the system itself. However, criticisms are being raised about the approach of making a priori reductions of relatively autonomous phenomena as homeostatic ecosystems.

Because the population rather than a social order is analyzed by this approach, culture is seen in terms of the functions in which it serves in adapting local populations to their environments. Societies are the adaptive units which respond to environmental circumstances in order to exist as stabilized components of the larger ecosystems (Richerson, 1977). Therefore, it is possible to infer that the spatial analysis of the environmental constraints on human behavior are related as a major analytical problem which refers the linkage between individual and group phenomena. Two areas in which environmental constraints on human behavior are likely to be found are: scarcity and unpredictability (Hardesty, 1980).

Two models have used scarcity to explain variability and change in human behavior; efficiency and competition. The efficiency model is used in ecological anthropology as a predictor of how individuals select among environmental means of reaching goals, in other words the ways in which scarce resources are allocated among alternative use and users. The competition model outlines how scarcity causes social constraints on the means of reaching goals that are accessible to the individual. The key is the principle of competitive exclusion which states that under competition, organisms will change to remove or reduce the intensity of the competition. These changes are 1) to intensify territoriality resulting in the geographical exclusion of the

competitors, and 2) to change the resources that are being used to achieve goals (niche differentiation).

Unpredictability as environmental constraint refers to the fact that the most cost-efficient means may suddenly disappear or be otherwise inaccessible because of an unexpected change in the environment. Again, two models explained this concept. First, resilience models assume that diversifying the range of alternatives available to the individual is one way of increasing persistence. For instance, the looseness, fluidity and flexibility of social organizations may allow rapid shifts from a resource or other life opportunity where patterns of environmental stress are regional, based on localized and unpredictable fluctuations. Secondly, damping models use the ecological principle of buffering which correlates the diversity and stability of ecological systems to explain the origin of complex states. They contend that the more complex a sociocultural system is, the better it is buffered against unexpected environmental fluctuations. For instance, social and economic exchange are especially important because they reduce the risk of an unexpected regional or local environmental change.

On the other hand, Ellen (1979) remarks that in the systems analysis of human behavior it is practically and intuitively easy to isolate "systems" which make sense of data and which may be used for the investigation of a wide range of problems. However, this author noted that it is empirically complicated to specify them in terms of numbers

of connections or intensify of flow. The boundaries of systems may often be modified from an original a priori delineation, so as to conform with emerging data, or to make data conform with a model. Therefore, the search for "systemness" rather than arbitrary definitions remains an important issue in the interpretation of human behavior patterns. Clearly, this author is dealing with regional aspects which can be assumed as determinants in explaining the process by which the reproduction of cultural and environment patterns occur. Therefore, ecosystems are considered as analytical and comparative units which are conceived as flows of energy, materials and information. Social and cultural systems are seen as possessing rational structure and regulatory properties.

In terms of limits of ecological explanation within this approach, ecological anthropology explains only cultural change resulting from exploitation of different natural microenvironments into which the system expands. The outputs of this tendency to treat cultures does not include the historical changes in complex societies which remaining in the same environment and are governed by political forces or others (Honigman, 1976:292-3).

The Neofunctionalist approach provides us some key concepts for understanding regional strategies of development and cultural change of urban agriculturalists of Mexico City. Particularly, it is very helpful to consider that the reproduction of cultural and environmental patterns may be

understood by using a systems approach. Once the system is conceptually demarcated, we can define its rational structure and regulatory properties. Therefore, spatial or regional analysis of the environmental constraints on the complexity and diversification of cultural systems will provide the necessary elements for understanding development and cultural change.

### Processual Ecological Anthropology and its Contributions

The processual approach is the third stage of the development of ecological anthropology. This approach refers to the importance of diachronic studies in ecological anthropology and to the need to examine mechanisms of change (Orlove, 1980). Since ecological research is compatible with materialist and political economic paradigms in anthropology, the starting point of the processual ecological analysis is the way in which people interact with nature in order to produce and reproduce (Gross, 1990:311). This field has involved several trends which are a) the examination of the relation of demographic variables and production systems, b) the response of populations to environmental stress, c) the formation and consolidation of adaptive strategies, d) the mechanisms by which behavior and external constraints influence each other, and e) the interaction of population and environments.

Among these aspects, a first major conceptual component of this approach has been set up under the focus of decision-



making models which have offered the potential of examining change through an analysis of the processes which generate economic, political and social relations. Decision-making models can provide a mechanism of change because there is interaction between the choices which actors make, behaviors on an individual and group level, and the biological, social, and cultural systems which influence the distribution of resources, constrain the possible adaptive strategies (i.e. diversification and intensification responses), and provide some of the goals which the actors attempt to meet. Obviously, this conceptual trend emphasizes the following variables: ecological processes, demography, environment, adaptive strategies, social organization and culture.

The anthropological research about decision-making has been concentrated on household levels. Since households are not totally isolated and self-sufficient, raising the problem of setting the boundaries around the household unit has been a crucial methodological concern. By treating households as systems analogous to ecosystem, consumer research and the ecological study of energy and resource flows within this ecosystems have been done (Wilk, 1990). Concepts such as trophic exchanges has been developed through parallelism with Marxist dialectical theories of systems (Ellen, 1990). Moreover, reformulations of the ecosystemically-oriented ecological anthropology of the early 70's have been included within the actor-oriented perspective in anthropology. Thus,

former functionalists authors, such as Rappaport (1990), have come to redefine the use of the ecosystem concept.

The importance of this reformulation process is that the concept of region has been included. It is noted that regional systems are composed of interactions among ecologically similar populations, that is, distinct populations of the same species occupying similar or equivalent ecological niches. Whereas, ecosystems are composed of more or less continuous interactions among ecologically dissimilar populations which occupy distinctive positions in networks of trophic exchanges. Therefore, local groups participate in, and are the locus of conjunction between local ecological processes and regional social, economic, and political processes (Rappaport, 1990). However, in the process of applying the ecosystem approach there is still a lack of clear criteria for boundary definition. Combining time, space and hierarchical levels has been a need to be accounted in this approach.

The second theoretical component of processual ecological anthropology is based on the contributions of Marxism. Structural Marxism, which was developed partially within the field of anthropology during the late sixties, studied the determinative forces not in the natural environment and/or in technology, but within certain structures of social relations (Ortner, 1984). This school of thought put a strong emphasis on the model of social organization which includes the analysis of structures of

social, economic, and political relations. For the scholars of this perspective, social and cultural phenomena were to be explained largely by being referred to systemic/structural mechanisms of one sort or another (Ortner, 1984:145). The cultural phenomena (beliefs, values, etc.) were allocated in the model of social structure as a ideology, which had the powerful effect of connecting cultural conceptions to specific structures of social relations. This approach was still rooted on conventional anthropological studies which focused on discrete societies or cultures.

During the seventies, the role of Marxism was compatible with the emerging interest in political economy in anthropology (i.e. dependency theory), the concern for a historical materialist perspective, the emphasis on the links between local populations and wider systems. Thus, this kind of approach may include studies on regional context, complex societies, the state, and a world-systems perspective. From a Marxist analysis, each social formation is pushed toward transformation by conflicts within the base, between the base and superstructure, and between the social formation and its wider natural and social setting. Therefore, the contribution of Marxism consists in abandoning the emphasis on the population as the unit of analysis, and to examine the history of interaction between environment, social structure and culture in specific setting, the wider economic and social context, and the articulation of trapping economies with the capitalist world system.

Despite the fact that this approach may be criticized for being too materialist, it incorporated cultural or symbolic issues into its studies. With the Marxist method of cultural interpretation, culture and ideology are not the same. Cultural representations exist only when they are socially organized; consciousness is always subsumed in existence, never autonomous from it. Therefore, cultural representations are not logical systems straining toward consistency, they are ordered by social contexts, not by the logic of mind (O'Laughlin, 1975). This author noted that if we misunderstand the social relations through which culture is organized, then we misinterpret culture as well.

From the processual ecological anthropology's perspective, environmental factors influence social structure, modes of production and culture in important ways. Orlove (1980) noted that these factors have been mediated by certain patterns but differently for certain regions. Thus, by comparing two societies he defined that each village is the outcome of a long history of interaction between environment, social structure and culture. In this regard, by studying the ecology and ethnicity of two alpine communities in Europe, Cole and Wolf (1974: 287) reported that differences in nation-building process are not "inherent" in the culture of the two populations, but each village responded differently at different times, to the interests and demands of particular elites within a wider political field. Finally, Orlove (1980) mentioned that processual

ecological anthropology may study the relation of demographic variables and production systems, the response of population to environmental stress, the formation and consolidation of adaptive strategies, and the influence of regional and national contexts on political economy, local ecology and social structure. However, he stated that efforts at synthesis of the variables are still incomplete.

In this dissertation, the processual approach influences our examination of the mechanisms of change in the urban agriculture of Mexico City through the analysis of the processes that are generated at an individual and group level. For instance, by examining the ethnohistoric and the current interaction between macro-environment and culture in southern regions of Mexico City, we may interpret the urban-agricultural consciousness and identity as the result of the relations among agricultural production, labor organization and migration.

### Concluding Remarks

Despite the importance of environmental factors in shaping collective patterns of human behavior, which was particularly emphasized in the first two historical stages of ecological anthropology, a lack of discussion of the power of region as a theoretical and analytical construct has been detected through the literature. For instance, both Kroeber and Steward's theoretical and methodological positions set the culture-environment relationship within an overall

particularistic framework. In this stage of development of ecological anthropology, the regional context is focused as cultural or ecological areas which were spatially or geographically defined previously by the researchers. In most of the cases, the presence of the relationships between culture and environment is descriptive. The patterns of change of these relationships which impose the definition of what is a cultural region and its processes of change over time are not described.

Under the impact of systems theory and biological ecology, functionalism was a new theoretical orientation where the ecosystems became the new analytical and comparative units. The neofunctionlists claimed that the basic facts of technology, environment, and demography determine social structure and culture (Orlove, 1980). Ellen (1979) noted that while the notion of system is a fundamental one and has led to significant conceptual and empirical advances, it is insufficient in itself. Another important criticism to this approach consists that ecosystem analysis in biology operates with far stricter equilibrium models than those in anthropology, and the biologist may deal more directly with natural selection and the adaptive value of specific characteristics of the organism (Netting, 1982).

The functional approach includes the definition of adaptation as the both self-regulatory process through which living systems maintain themselves in fluctuating environments, and the self-organizing processes by which they

transform themselves in response to directional environmental changes (Netting, 1982). Nevertheless, I believe that the selection of variables, the degree to which they must be divided, conveniently grouped or ignored, and the level of closure for any system analysis, are all matters which must be determined by a particular theoretical orientation. In general, the functional approach shows a lack of contributions on regional studies which pose important questions about the level at which systems are able to reproduce themselves and they also illuminate social and ecological variation which allows the evaluation of particular hypotheses concerning local populations.

I believe that within the three stages of development of ecological anthropology there is a gap about the question of cultural systems, regional space and population trends (i.e. migration). This may be due to the fact that space and the relationship between culture and environment have not been completely understood, and the theoretical and methodological foundations in regional analysis is still in the process of development.

In order to address the larger theoretical issues inherent to the relationship between the social and cultural systemic dimensions of human interaction with the environment, it is important to consider that the focus of research in ecological anthropology must be on the on-going societal and people environmental relations that confront a combination and the variations of the following factors:

culture, ideology, technology, environment, human populations and political context. Therefore, a holistic and historic grounded perspective should be oriented toward the explanation of both natural and social elements for human-environment interaction at both the systemic and the regional levels and at both historical and structural dimensions. For instance, DeWalt (1988) noted that a modern cultural ecology approach tries to understand the ways in which human relations affect the relations between humans and nature, and how the results affect human systems and ecological systems. Thus, this approach may examine the processes of interactive cultural and ecological adaptive change from a holistic (relations of systems), comparative (global or regional), and evolutionary (historic and futuristic) perspective.



CHAPTER 3  
ETHNOHISTORIC PROFILE OF URBAN AGRICULTURE IN SOUTHERN MEXICO  
CITY

Introduction

This chapter portrays the ethnohistorical elements in which are founded the continuing practice of agriculture, the regional landscapes of Xochimilco and Milpa Alta and their interaction with urban markets for labor, produce and land in the southern area of Mexico City. Ethnographic evidence is presented to assist in identifying traces of the former ties of intensive lacustrine agriculture and temperate highland agriculture with urban economic activities. This chapter supports the idea that the coexistence of urban and rural components in the same geographical space in Xochimilco and Milpa Alta is the result of an ancient model of Aztec urbanization, which implied high cultural development and functional articulation of urbanization processes and agricultural expansion.

The major economic role of chinampa agriculture in Xochimilco was to provide food supplies, and of the pine-oak forest of Milpa Alta was to provide an abundant raw materials reserve for technological artifacts and fire wood to Tenochtitlan. The rural landscapes and their farming

activities were seen as an integrated physical, social and cultural component of the Aztec city. The coevolution of city structure and farming land constituted complementary parts of the Aztec model of civilization. The Aztecs have been widely recognized as an urban culture (Smith et al. 1994). One of the major attributes of the major Aztec city, the imperial capital of Tenochtitlan, is the existence of agricultural areas around the outskirts of the urban structure (Smith and Hodge 1994: 8).

Interest in the interrelationships of environment, technology, settlement patterns, and sociopolitical organization has long characterized research of Mesoamerican civilizations. During the last two decades, the analysis of Aztec society has focused on theoretical models of politics, economics and settlement patterns (Berdan 1982; Nichols and Frederick 1993). One major question concerns the role of hydraulic agriculture, particularly the chinampa system, in facilitating population growth (Wolf 1976: 4). Archaeological and ethnohistorical studies have provided important insights into the development of prehispanic *chinampa* agriculture in the southern Valley of Mexico. Numerous historians and scientists have noted that the development and expansion of chinampa agriculture was a key dimension of population growth, state formation, and urbanization processes (Calnek 1982; Parsons et al. 1985; Hassig, 1985). Studies relating urban development and chinampa agriculture during the late Aztec period (1350-1525) have been focused on the role of

this agroecosystem in provisioning food to the large, dense population of the Valley of Mexico (Parsons 1976; Parsons et al. 1985). Other authors have reported information about hydraulic technologies during the Aztec era, principles of natural resource management in *chinampa* agricultural production, agricultural methods and techniques in *chinampa* farming (Armillas 1971; Palerm 1972; Rojas 1991). However, few studies have taken an ethnohistorical approach to examine the current complex interrelationships among cultural, socioeconomic and environmental processes of the adaptive strategies used by the urban agriculturalists has been relatively unreported in the literature.

#### The Aztec Model of Civilization and Tenochtitlan

In the Late Aztec period (1350-1525), with the expansion of the Aztec state and the development of large-scale hydraulic projects within the lake Chalco-Xochimilco, urban and agricultural activities were integrated in the pattern of city development, in which the *chinampa* system was considered the principal surrounding and inner-city agriculture (Smith and Hodge 1994; Leon-Portilla 1992; Hassig 1986). Since it has been noted that there was a close relationship between growth at Tenochtitlan and the development of *chinampa* agriculture (Parsons et al. 1985), Aztec urban civilization may have been dependent on the evolution and complexity of

this intensive agricultural system located in the Lake Chalco-Xochimilco.

*Chinampas* consisted of narrow, rectangular raised platforms (from 2.5 to 10 meters wide and up to 100 meters long) which were usually constructed by alternating layers of mud scraped from the lake or surrounding swamps and thick mats of decaying vegetation over shallow lake bottoms or in marshy zones. The Aztecs built their platforms up to a height of 0.5 to 0.7 meters above water level and reinforced the sides with posts interwoven with branches and with willow trees planted along the edges (Armillas, 1971). After the artificial islands had reached a height of a few centimeters above the lake surface, the sides of these platforms were reinforced with posts interwoven with branches and with "ahuejote" trees (*Salix Bomplandiana* L.), which were planted along the edge to retain soil. Aztecs used to live on these platforms and cultivated a variety of crops. Mexico City was therefore a *chinampa* city (Coe 1994). In the Late Aztec period (A. D. 1350-1525), approximately 60% of the total population resided in the fringe *chinampas* and mainland rural villages (Sanders et al. 1970). Today, the total land cultivated by *chinampas* is 1070 ha of the approximately original 12,000 ha. The predominant cropping systems are ornamental and horticultural production. There is still a high degree of plant diversity that includes at least 40 different types of vegetables of which 60% are sown in multiple cropping systems. Similarly,

131 species of ornamental plants and flowers are produced (Torres-Lima et al. 1994).

Since the Aztec era, the use of Milpa Alta's natural resources and its agriculture was determined by physical and ecological conditions such as altitude, latitude, rainfall, and vegetation. This region is covered by 70% of mountains and 30% of valleys (Chavira, 1992). A wide range of forest resources were used by the Aztecs year-round, such as small and large mammals, grasses, fruits and abundant forested raw materials. Agriculture was limited to the production of corn, maguey and its products, and some beans. Multiseasonal activity around forested and open lands was an important factor to promote permanent residency of Aztec populations. Today, the most innovative crop adopted recently was the *nopal*. The current production of this plant in Milpa Alta satisfies 80% of the national demand of Mexico. Besides *nopal*, corn and other vegetables are sold in Mexico City's markets.

Aztec civilization and its urban non-food producers depended in great part on the evolution and complexity of this lacustrine area and temperate highlands agriculture located on the Lakes of Chalco and Xochimilco and surrounding regions (Carrasco and Matos 1992), and on available raw materials within lacustrine basin. It is estimated that about 10,000 hectares of highly productive chinampa fields would probably have been sufficient to supply at least a half million people with basic food staples (Sanders, Parsons and

Santley, 1979). The Chalco-Xochimilco lacustrine basin zone was capable of delivering the equivalent of about 50-66% of annual subsistence requirements of maize for a population of 150,000 to 200,000 (Parsons 1976). Redclift (1987) reported that the combined population of the two main cities in the Valley of Mexico, Tenochtitlan and Tlatelolco, was between 200,000 and 300,000, five times the size of Henry VIII's London. The estimated regional carrying capacity at the Late Aztec period based on the agriculture development, has been calculated at 1,250,000 people. It is concluded that the pressure of human populations on agricultural resources was never a driving factor in cultural evolution in the prehispanic Valley of Mexico (Blanton, et al., 1993).

The symbolic world and sacred aspects of the Valley of Mexico's landscape provide different perspective on the world the Aztecs lived in, and how they perceived it. Soustelle (1970) noted that the Aztec civilization, its city and its events are full of historical accounts and mythical sources. They venerated places, events, forces of nature, plants and animals. In the Mesoamerican agriculture, the plants, technology, and the implements formed a harmonious and coherent whole (Rojas 1984: 199).

The symbolism of Tenochtitlan city as cosmic center coordinating human and divine actions and orienting them in space and time was the centerpiece of Aztec civilization. Leon-Portilla (1987: 50) identifies the great temple as the Aztec axis mundi and interprets other aspects of its

symbolism in terms of a series of dualities based on tribute and agriculture. This author noted that the existence of this duality was related with the religious thought of the nahuas. The Aztec's dualistic cult to agriculture and war was present in the main temple, dedicated to Tlaloc, the god of rain, fertility and the growth of plants, and to Huitzilopochtli, warrior god and god of conquest (Carrasco and Matos 1992: 28). The great temple was the material manifestation of history, myth and ritual (Matos 1987: 15-60). Broda et al., (1987) argued that this duality is also present in the practice of burial offerings at the great temple, which is based on the observation of nature and associated with agricultural fertility.

The significance of Tlaloc was not only as a rain and earth god but also as a fertility and mountain god. As Morrissey (1957: 24) suggested, the deities worshipped and the seasons observed were closely identified with agriculture. Moreover, ritual calendars, which were one of the great accomplishments of Aztec civilization and were tied to all aspects of ancient mesoamerican life, reflected seasonal rituals that were tied to seasonal change, and as such, served a pragmatic function: to regulate agricultural activities (Grigsby and Cook de Leonard, 1992: 109-192). Clendinnen (1991) stated that much of the wealth was spent to embellish the city as the symbolic center of empire. There was a correlation between city development and cosmology.

In the late Aztec period, the twin cities Tenochtitlan-Tlatelolco occupied an area of 480 hectares of solid ground and approximately 720 hectares were made up of the chinampas constructed in the lake (Hardoy, 1973: 160). Hardoy (1973: 160) noted that most chinampa lots in districts considered as urban or suburban had two clearly defined areas: the chinampa itself or cultivated land and a section where the house was built. It is assumed that in the chinampa lots located nearer the center of the city the proportion of cultivated land was lower than in suburban areas. Tenochtitlan was constantly being enlarged by the addition of new chinampas (Katz, 1974: 179).

According to the maguery paper map drawn between 1557 and 1563, that describes a portion of Tenochtitlan city, the chinampas constituted the most extensive part of the city. Because the chinampa lots were regular, almost square in shape, with canals and footpaths on alternate sides crossing each other at right angles, they impose an urban scheme of regular lines on Tenochtitlan. However, this city had a predominant irregular form due to its peripheral expansion resulting from the addition of new chinampas to the city's central core. These chinampa land extensions were determined by variations in the lake's depth around the island and by a natural tendency to be as near as possible to the mainland on the closest side, the west, toward Tacuba (Hardoy, 1973: 526). Nevertheless, the hierarchical structure of Aztec



society dictated the arrangement of the city's zones (Hardoy, 1973: 181).

The Tenochtitlan city-state implied a complex social organization, high population, sophisticated use of the territory and natural resources, complex religious practices, trade and war relationships. Despite the fact that the complex Aztec society made a significant investment in water management, the initial outlay was at the community level. Scarborough (1991: 139) noted that the time and energy channeled into the construction and maintenance of a local reservoir or canal system tethered a community to a territory.

After the Spanish invasion, the full apprehension of the city's majestic order by the Spaniards took several years (Clendinnen 1991: 15-44). It was necessary to live, feel and contemplate the city for a long period in order to have a better understanding of the urban complexity present in Tenochtitlan. Clendinnen (1991: 15-44) noted that the city's grandeur was planned. The most astonishing characteristic of the city was that the towns, pyramids and buildings rose from the lakes. Nature and urbanism were one. Clendinnen stated that the city was also something of an economic and social miracle. For instance, she noted that despite the difficulties inseparable from its setting -- constrictions of space, dangerous seasonal variations in the level of the lake waters, a constant shortage of wood and fuel -- the lake-borne city enjoyed some notable advantages. The main of these

was the crucial transportation of supplies and products by canoes and the organization of the canoe-men. In Milpa Alta, during the reign of Huellitlahuilli a port for canoes was built at the north of the Chalco-Xochimilco lake in order to trade wood materials, corns and other materials produced from the south (today, states of Morelos, Guerrero, and Oaxaca). In both, Xochimilco and Milpa Alta, the Calpulli was the social and administrative unit in charge to organize and develop most of the transportation activities. However, supervision of the city and local administrators was always present in the city. The State administration was responsible for the magnificent economic and social solidity of the imperial city.

#### City, Civilization and Agriculture

When migrant groups, mainly Chichimecs, arrived in the Valley of Mexico in the 13th century, they began to learn about intensive cultivation from existing agricultural communities of the southern chinampa farming and to take advantage of forest resources located at the temperate highlands of the basin of Mexico. Knowledge of agriculture, the acquisition of farming lands and raw materials were another step to economic power besides military strength. As the immigrant peoples adopted agriculture, they incorporated ways of organizing land and soil that reflected the stratified society of the older towns, and their rulers began to assume new roles and status in promoting agricultural

prosperity (Towsend, 1992: 52-54). Therefore, changes in social organization began to take place as the communities settled and acquired agricultural land.

Towsend (1992: 50) noted that during the 13th and 14th centuries chinampa zones were restricted to islands within the lakebed and to ground around the edges of the lakeshore. In these centuries, the southern communities around lake Chalco-Xochimilco, including the highlands, were economically stable, for it had copious summer rains, freshwater springs, forest resources and a long tradition of chinampa agriculture and hillside farming terraces. The rhythm of these communities was predominantly set by the eternal round of the agricultural cycle, enlivened by small-scale hostilities.

Urbanism in the Valley of Mexico was based on the pre-urban settlement pattern of a large number of small nucleated settlements, hamlets and isolated homesteads typically located in areas of chinampas and hillsides. This dispersed character of Aztec settlement may suggest that houselots were the primary unit of residence. If the household was the major integrated economic and co-resident unit, agricultural intensification using chinampas was based on small-scale independent household producers. Thus, the economy of scale and specialization may have been a result of the growth in household size rather than of the appearance of supra-level forms of economic organization. Moreover, the presence of laws restricting the spread of craft activities indicates that households were under pressure to maintain a high

commitment to agricultural production rather than diversifying their economic base. The result was a relatively stable household regime which was organized to meet the needs of agricultural production within the city under the lacustrine setting of the basin of Mexico (Stantley and Hirth 1993: 23).\_\_

The gradual transformation of non urban communities into urban ones was due to growing social and economic differentiation between the population situated in hydraulic areas and its dependent settlements located in less favorable localities (Sanders and Price, 1968: 200). The reclamation of swamplands for chinampa cultivation implied that agricultural settlements were individually larger and more densely clustered than at any previous time (Calnek, 1982: 44-45). At the same time, the construction of hillside farming terraces, the *maguey* cultivation, the works to prevent erosion, and the hydraulic works to obtain water from hillside springs, implied that Milpa Alta's inhabitants were also clustered in small towns (Torres-Lima, 1991: 25-27). The intensive and highly productive chinampa agriculture supplied considerable food to non-food producers. Thus, large administrative and political centers increased in number and size, requiring services and goods from artisans and urban workers. Dual occupational specialization as urban agriculturists and urban workers occurred, as technological development and societal complexity increased. Sanders and Santley (1983: 289) noted that the urban specialist to food producer ratio of 1:2-3 may

represent the maximum level of urbanization that can be sustained on a long-term basis without mechanized agriculture and industrial production.

By the 15th century, especially during the reign of Motecuhzoma I, older chinampas zones were incorporated in larger drainage and water-control systems that included large-scale construction of new chinampa fields. During this Late Aztec period (1325-1521), the level of technology reached in agriculture was rarely equaled elsewhere in the world (Leon-Portilla, 1992). In Milpa Alta, Huellitlahuilli directed most of the works on hillside farming terraces, including the extensive *maguey* cultivation, and organized the slash-burn system for corn production. The extensive areas of water in the basin of Mexico required the development of extensive and sophisticated hydraulic enterprises, including: irrigation networks with floodwater systems and canals, and drainage systems including dams and sluice gates that closely regulated water levels over a wide area, and a huge outlay of labor in the construction of fields by piling up masses of soil and vegetation (Sanders, Parsons and Santley, 1979). This water-control system was essential to ensure good harvests throughout the year, to avoid flooding during the rainy season, and to maintain moisture during the dry season. Wide-scale chinampa construction in the Valley of Mexico was an Aztec innovation that began after the late 1450's. The southern two lakes, Chalco and Xochimilco, were devoted to chinampas, which show an overall uniformity in chinampa size

and orientation, and a regular layout indicative of state planning probably carried out over a short period of time (Towsend, 1992: 167; Hassig, 1994: 124).

This large-scale establishment, maintenance and development of chinampa involved extensive use of human labor, sophisticated hydraulic technologies, corporate investment and administrative complexity (Parson, 1991: 34; Scarborough, 1991: 127). Water and the chinampa agroecosystem became the constitutive elements of the urban landscape. Beside the agronomic advantages for food production, the natural landscape offered important sources of supplementary food, such as fish, birds, and wild plants. The complex knowledge systems implied in these activities depended on the biological interactions in this ecosystem and on the social and economic needs of the city. Technologically speaking, diverse adaptive strategies were created by use of local natural resource use, social organization, and market demands. The chinampas of the Basin of Mexico provide the evidence that inputs (labor, capital and technology), frequency of cultivation, and outputs were intensively high for these wetland raised fields and for the demands and development of Tenochtitlan city.

The Aztec-state elites promoted intensive and large-scale hydraulic agricultural systems in close proximity to urban centers as a way to secure food supply and tribute and to consolidate their control over regional elites and commoners (Nichols and Frederick, 1993: 143). Since

Tenochtitlan could not afford to import food from great distances, by dominating the market in manufactured goods the Aztecs forced their nearby allies away from self-sufficient economies and toward an integrated valley-wide economy in which they acted as the agricultural hinterland of Tenochtitlan's industrial and commercial core (Hassig, 1994: 125). At the same time of State intervention, the agricultural development of the area promoted economic integration of nearby towns and the growth of urban centers in this late Aztec period.

Since demographic growth required technological innovations to expand local food production per land area and per inputs, chinampa cultivation was closely correlated with high regional population and to the growth of sizable local urban communities. Because of the high productivity of chinampa farming the density of rural settlement was unusually high (perhaps as high as 1000 per Km<sup>2</sup> in some areas) and a chinampa domain would appear as a single physical community from the air. In fact, since the domain borders merged, the entire chinampa area might appear as one huge settlement (Sanders, et al. 1970: 447). These authors noted that ecologically the chinampa mode of life can be called rural but the degree of involvement with urban life and economy was clearly much greater than in normal peasant communities. They also remarked that politically and socially the area was undoubtedly considered by the Aztecs themselves as a part of the twin cities, Tenochtitlan and Tlalelolco.

From the figures presented in Sanders work (1970: 447), total population of between 120-200,000 directly tributary to the ruler of Tenochtitlan, and from other sources reviewed by Clendinen (1991: p.305), it is estimated that 60% of the valley population was distributed among the rural settlements of the city, and the densely settled chinampas areas would have included the 20% of the people residing in this fringe (Sanders, et al. 1970: 449). This picture of the city's settlement pattern implies that the political power, urban development, economic growth, wealth and resource management in Tenochtitlan coincided with the historic evolution and transformation of the inner-city and surrounding agriculture, specifically with the chinampa system. In other words, the Aztec imperial expansion was based on land use and agricultural production besides the tribute obtained by wars. Thus, urban and Aztec imperial expansion were inextricably interrelated with the spread of the intensive, surplus-producing chinampa system.

#### Regional Economic Structure and the Urban Agricultural City

Tenochtitlan was the primary city in the basin of Mexico. It had a preeminent role as the political and economic center of the Aztec empire. The Aztec urbanism implied other important political capitals like Texcoco or Cuauhnahuac. However, the basic level of political organization in Late Postclassic central Mexico was the city-



state or *altepetl* which was the socially stratified state community that occupied a definite, bounded territory with a capital and subject urban settlements and lands (Smith, 1986). The mean urban population density for cities in the basin of Mexico varied between 157 persons per hectare for Tenochtitlan, 54 for Texcoco (as a political city), 61 in other city-state centers, and 21 for other settlements (Smith et al., 1994: 9). Smith et al. (1994: 9) reported that Xochimilco, as a city-state, had a population density between 40-50 persons per hectare. In Milpa Alta, this level of political organization, by city-state, has not been reported in the literature. However, this town and its inhabitants was politically included within the regional system of Xochimilco (Martinez, 1987). The Aztec empire as complex political system developed approximately 40-60 city-states with their own internal hierarchies (Hodge, 1984: 3). These regional systems were hierarchical organizations in which the politico-administrative urban functions were the most important characteristics. Hodge (1984: 3) noted that the city-states operated in space as well as in time where there was exchange of information and materials. The centralized administrative system implied the organization of labor and the collection of tributes, which were controlled by the rulers (*tlahtoani*, pl. *tlahtoqueh*). These rulers were in charge of governing these city-states. Provincial ruling dynasties cooperated with the rulers of the Triple Alliance states in the economic exploitation of their local commoners.

The land tenure in the Valley of Mexico was supported by the *Calpulli*, the base of the Aztec social order that held communal land that was assigned to individual families. As a Mexican and member of a *Calpulli* of Tenochtitlan or Tlatelolco, the common people (*maceualli*) who were the majority of the population had usufruct right to the plot upon which they built their house and in the piece of land that they cultivated. The *maceualli* was the peasant, whose labour was requisitioned and whose crop harvest always was laid under contribution. The *maceualli* bore the whole weight of the social edifice (Soustelle, 1961: 70-71).

Imperial politics created shifts in landholding patterns, agricultural production, and the relationship of agriculturists to their land and overlords. Even in a restricted geographic setting, such as Milpa Alta, regional variation characterized the history of subject altepetl, their hinterlands and the empires themselves. In the new agricultural and forested zones, considerable numbers of farmers were not *calpulli* members but resident tenants tied to the land of states, who paid rent in kind to owners residing in Tenochtitlan. These laborers were essentially dependent on the states and were supervised by state-appointed administrators. Berdan (1977: 100) noted that among the Aztec, supply and demand factors cannot be considered independently of political and social institutions. Thus, food and raw materials were supplied to Tenochtitlan by tenant farmers living outside the traditional *calpulli*

framework, and additional food was acquired from non-tenant *calpulli* farmers who brought their surplus to market. A third source of food was provided by the tribute exacted from conquered communities (Towsend, 1992: 166). The *calpulli* territories were owned communally, and as agricultural chinampas were developed, individual families were assigned hereditary rights to particular tracks. The users paid a form of tax or tribute for their farming privileges. These farmers -the macehuals- were the free commonfolk of the nation.

Social development in Aztec society implied that agricultural centers paid tribute to, and were dependents of Tenochtitlan. Both, tribute of chinampa farmers and of people from Milpa Alta was paid in agricultural produce and labor. The Xochimilcas were forced to work in hydraulic enterprises, in urban jobs such as aqueduct construction and in defense of the city (Gonzalez, 1988). The *Milpaltenses* were responsible for constructing roads that communicated the plains of Atocpan and the hilly landscape of the volcano Teuhtli with the parts of Xochimilco. They needed to defend these roads and their forest resources, which were important enclaves for the Aztecs (Torres-Lima, 1991: 25). Perez (1984) suggested that probably the Aztec state contributed to the unity of the Xochimilco territory by considering it as only one tributary province. Thus, the political and cultural relationships between the Aztec group and Xochimilcas involved the conservation and use of the geographic space in the chinampa

area and the social reproduction of the basic cultural organization among the Xochimilco inhabitants.

Despite the fact that the Aztecs established client-like relations with the city-states, maintaining them as buffers and sometimes establishing fortresses or garrisons at their borders, the city-states in the Valley of Mexico formed a number of political factions. By studying the socio-political organization during the Aztec periods, Brumfiel (1989) noted that structurally and functionally identical groups competed for resources or positions of power or prestige, or both. In the southern valley, intensive chinampa agriculture provided an expanding resource base and a quickly growing commoner population. This access to the resources implied that factional competition was less intense among them.

By developing an intricate land-use system that provided the basis for a highly productive agricultural and trade economy (Hurt, 1987: 6), chinampa agriculturists and Milpa Alta's inhabitants were economically linked to producers and consumers in other parts of the Valley of Mexico. Parsons, et al., (1985: 91) suggested that in Late Aztec period inhabitants of the chinampa zone acquired non-agricultural products directly from Tenochtitlan. Since this time, urban articulation of the chinampa community has evolved. For instance, Sanders and Price (1968: 198) reported that the community of Xochimilco, with a population of 15,000 in 1920, agriculture was the primary source of subsistence for the majority of the population. However, it also had a permanent

market and great numbers of part- and full-time specialists in non-agricultural activities. By 1990, 68% of the chinampa farmers of Xochimilco were involved directly in urban jobs (Torres-Lima et al., 1994).

### Concluding Remarks

Technological achievements and urban development in the Aztec society was partially based on social, political and religious organization. Angulo (1993: 160-161) noted that this is probably the basic reason why agricultural production and the other creative manifestations such as architecture, urbanism and other arts, did not transform, alter or destroy the natural landscape or ambiance where the Aztec created its cultural settlements (Angulo, 1993: 161). Clearly, the chinampa agriculture in Xochimilco played an important role in providing food supplies and as a physical layout of Tenochtitlan. On the other hand, the region of Milpa Alta was the major source of pine-oak forest materials for Tenochtitlan's needs. Besides this, both rural-urban landscapes were part of the development of the Aztec civilization by incorporating complex social systems (i.e., the calpulli and its flexibility as social organization in the urban expansion and agricultural production) and by the outcome of a process of ecological adaptation (including the critical levels of integration to particular ecological zones; lacustrine area and temperate highlands).

As population-urbanization expansion, agriculture and exploitation of natural resources were occurring in correlated processes, the urban development of Tenochtitlan was increased. Particularly, the chinampa system played an economic (agricultural productivity) and social role (state intervention and control on and regional community organization) in the formation of the Aztec state. The long-term stabilization of the chinampa agriculture, at least from 1325 to 1950, was due to energy and resource base conservation, a high level of environmental quality, appropriate local technology, stable land tenure, economic profitability associated with urban markets, and social and community cohesion (Torres-Lima et al. 1994: 39). Today, both the chinampa community in Xochimilco and the community of Milpa Alta have continued to shape the present in their own terms even after the influence and effects of the macro-urbanization process in Mexico City that has come to challenge all definitions of past, present and future for these types of urban agriculture and for the city itself.

CHAPTER 4  
REGIONAL AND INTERNATIONAL MIGRATION PATTERNS AMONG URBAN  
AGRICULTURALISTS

Territorial Integration and Population

Modern Xochimilco and Milpa Alta's territorial integration within Mexico City began 30 years ago as Mexico City speeded up its rapid urban and industrial expansion. The Olympic games were celebrated in Mexico City in 1968, and better transportation and communication systems promoted the integration between Xochimilco, and later Milpa Alta, to traditional urban areas. The proximity of these locations with urban centers and markets was a principal factor in determining the exchange of labor, resources, and products. However, emigration and immigration flows in Milpa Alta and Xochimilco are seen by local people as external processes of leaving and entering the geographical territories and cultural space of the communities. In both towns, people identified migration as any symbolic and physical displacement out of boundaries, where Mexico City, other states of Mexico or the United States are considered outside locations. A male informant from Xochimilco who goes out to work in Mexico City since 1951 summarized his experience of regional migration in this way,

Pues como campesino uno ganaba un dinero muy raquítrico, muy poco, ... si me fuí a la capital fue por el deseo de ganar mas, si a nosotros nos gusto aventurarnos fue por eso, por necesidad, uno estaba en edad de aventurarse. Ahora la verdad la gente ya no sale porque tienen un trabajo aqui mismo, no tendría sentido irse a la capital para regresar sin centavos y hacer lo mismo.

as a peasant one was earning miserable money, very little, ... if I went to the capital (Mexico City) it was for the desire to get more money, if we liked to adventure working over there it was due to this reason, because of necessity, one was at the age of adventure. Today, the truth is that people do not go out because they have local jobs, it does not make sense to go to the capital and come back without money, and do the same (interview, October 1995, Xochimilco resident).

Territorial and market integration was not found by local people to be enough of a criterion to define the cultural and economic boundaries of the communities. The people believe that they still belong to the rural geographical fringe regions of the metropolitan area, despite the fact that their territories fall into the political and jurisdictional limits of the urban central power of Mexico City, and that their own regions have developed local markets of jobs, services and products. The demarcation of a specific territory, the implementation of a group of cultural and socioeconomic practices, and the creation of relationships



within the urban context are all part of their rural-urban identity. This regional identity includes the moral basis of the social order, symbolic vestiges, and current practices of regional stewardship that depend entirely on the community, as an entity, for preserving their power or empower the communities. Thus, folded around this identity and community organizations, local households and their members have been empowered in order to enact their regional culture. In this sense, life, language, agricultural practices, urban routines, economic formulas and social relations of the family rural-stead have not been eradicated. These are the bastions of the urban-rural identity, which gives the distinctive character and enduring meaning of living in their regional setting, and it may be associated to their ethnic origin. However, this rural-urban identity definition, including the ethnic component, is perceived differently in each of the towns studied. For instance, in Milpa Alta 54% of the people surveyed consider themselves an ethnic group (Nahuatl) in contrast to 17% in Xochimilco.

The 1970s was a time when small rural communities were closely integrated into the urban expansion of Mexico City. Territorial integration meant the use of regional natural resources for urban purposes, including water from the springs of Xochimilco, and corn and cactus as major regional staples from Milpa Alta. In Mexico City, patterns of regional development, population growth and density, and urbanization have led to substantial deterioration of the environment of

the agricultural regions. Environmental impact caused by these processes ranges from chemical pollution of soil and water to changes in regional climate due to an increase in atmospheric carbon dioxide. Urban expansion in Mexico Cit has led to the displacement of 42% of the agricultural land to urban uses during the last 30 years. Particularly in the Xochimilco region, the chinampa area under cultivation decreased from 1,285 ha to 440 ha between 1969 and 1989 (Torres-Lima et al., 1994). During the 1970s the labor force speeded up the process of combining agricultural production with urban employment.

Despite the fact that the combination of employment and agricultural work have persisted for generations, some agricultural activities have been modified. For instance, Xochimilco producers started to simplify their cropping systems by cultivating only one kind of crop as a monoculture. Seasonal income fluctuations is mitigated by having part-time or full-time urban jobs. However, because of the frequent instability and low salaries of urban jobs, people started to converge toward farming as a economically viable strategy. These two trends were powerful enough in producing an ambiguous labor profile of urban agriculturalists. The complexity of this economic interplay and populational integration resulted in the overflowing of cultural patterns used by these urban agriculturalists.

In studying peasant-worker groups in Northeast Italy, Holmes (1986: 60) used the term "liminality", which was

coined by Turner (1967), to denote an ambiguous condition in which an individual is positioned between two statuses. According to Holmes (1986: 61) members of these liminal peasant-worker groups continually move back and forth across the threshold-the limen- that divides the world of the peasant and the world of the worker. In Milpa Alta and Xochimilco, this particular labor experience has been in fact a relatively unified and coherent cultural orientation, where occupational roles are typically important determinants of urban agriculturalists' livelihood, such as the peasant worker groups refereed by Holmes (1986: 61).

Today, although the absolute numbers of the economically active agricultural population are similar in the two studied urban-rural areas (14,967 in Xochimilco and 14,296 in Milpa Alta), there are differences because more people live in Xochimilco. Only 6% of the total population in Xochimilco is involved in farming activities compared to 22% of Milpa Alta. As a consequence of the different degrees of population density in the towns studied, an important trend was observed between labor force and economic integration with urban labor market. As is shown in Table 1, urban agriculturists in Xochimilco represent only 16% of the total economically active population (EAP). This figure indicates that 84% of its labor force is involved strictly in urban activities.

Table 1. Distribution of Urban Agriculturalists of Xochimilco, 1995.

	Xochimilco		
	Population	Percentage	Relative Percentage
Total <sup>a</sup>	271,151	(100)	
Economically AP <sup>a</sup>	91,005	(34)	100%
Agricultural EAP <sup>b</sup>	14,967	(6)	16%
Total Surveyed	185 <sup>c</sup>	(100)	
Total migrants	61	(33)	100%
To Mexico City	52	(28)	85%
To other states of Mexico	8	(4)	13%
To the U.S.	1	(0.5)	2%

<sup>a</sup> Source: INEGI (1994a)<sup>b</sup> Data are estimated from Canabal et al. (1992)<sup>c</sup> with a 92 percent level of confidence

Meanwhile, in Milpa Alta urban-agriculturists represent 75% of the total labor force (Table 2). The remaining 25% of the economically active population is integrated into the local and regional urban labor market. These differing results between the two towns suggest different trends in rural-urban migration and regional economic articulation within the major urban centers. Because our target population was only the agricultural EAP for both towns, we expected to find variation in regional trends.

Table 2. Distribution of Urban Agriculturalists of Milpa Alta, 1995.

	Milpa Alta		
	Population	Percentage	Relative Percentage
Total <sup>a</sup>	63,654	(100)	
Economically AP <sup>a</sup>	19,106	(30)	100%
Agricultural EAP <sup>b</sup>	14,296	(22)	75%
Total Surveyed	98 <sup>c</sup>	(100)	
Total migrants	41	(42)	100%
To Mexico City	32	(33)	78%
To other states of Mexico	7	(7)	17%
To the U.S.	2	(2)	5%

<sup>a</sup> Source: INEGI (1994b)<sup>b</sup> Data are estimated from Torres-Lima (1991)<sup>c</sup> with a 90 percent level of confidenceMigration to Mexico City and Employment

In Milpa Alta, 42% of the urban-agricultural population tends to emigrate, and 78% of those go Mexico City (Table 2). Fifty-six percent of these emigrants to Mexico City are involved in selling agricultural products in urban markets. The rest are employed in service and government jobs. Work in Mexico City is carried out by Milpa Alta's dwellers only during daytime hours. Of the total agricultural work force, only 32% is involved strictly in farming activities, whereas 68% combines agriculture with non-agricultural, urban employment (Table 3). This compares with data from 1986, when 53% of the agricultural EAP were working exclusively in

farming (Torres-Lima, 1991). Thus, the decrease of 21% of the total agricultural EAP by 1995 represents a significant articulation with the urban, non-agricultural sector of employment. These data agree with a similar 22% increase of people emigrating to Mexico City, from 31% in 1986 (Torres-Lima, 1991) to 53% in 1995, who combine agriculture with urban activities (Table 3).

In 1995, only 23% of urban agriculturists from Milpa Alta emigrating to Mexico City had a permanent urban job. This means that one person of every seven migrants had permanent and regular non-agricultural urban employment and income. This group was only 10% for the total agricultural EAP (Table 3). Thus, agriculture is still an important source of income to help to cover the region's needs. Forty seven percent of the population who emigrate to Mexico City had previous urban employment while only 33% of the total agricultural EAP had this experience. First time work in the urban labor market appears to be a current and important trend. This trend agrees with the increased pattern of urban agriculturists combining agriculture and urban jobs and emigrating to Mexico City, which is described in the above paragraph. It also may indicate that a younger, less experienced population is gradually switching from rural agriculture to urban skilled labor. Despite the fact that there is a high rate of migration (42%) and combination of agriculture with urban job employment (68%) among urban agriculturists of Milpa Alta, the regional setting still

provides 52% of the EAP with employment. Of this, 32% are solely engaged in farming activities. Moreover, 6% of the agricultural EAP of Milpa Alta work in urban activities in the other study site, the rural-urban region of Xochimilco.

Table 3. Labor Characteristics of Urban Agriculturalists of Milpa Alta, 1988-1995.

Labor Characteristics	Milpa Alta			
	Total Population		Migrants to Mexico City	
	1986 <sup>a</sup>	1995	1986 <sup>a</sup>	1995
<b>Regional Employment</b>				
Agriculture only	53	32	----	----
Agriculture and urban job	47	68	31	53
<b>Permanent Regional</b>	n.r.	10	n.r.	23
<b>Urban Job</b>				
<b>Previous Urban Job</b>	n.r.	33	n.r.	47
<b>Experience</b>				

n.r. means not reported

<sup>a</sup> Based on Torres-Lima (1991)

In Xochimilco, 33% of the population sampled regularly migrate back and forth. Mexico City receives 85% of this migration. Fifty percent of the migrants to Mexico City have employment in government institutions, and the other 50% work in diverse services including agricultural related jobs, such as plant sellers in urban markets. However, most of this agricultural marketing is located in the same area of the town of Xochimilco (markets of Xochimilco's downtown, Mercado de Madreselva, and Mercado de plantas del Periférico). These results show that an important proportion of residents of

both Milpa Alta and Xochimilco regions work outside their regions. Regional migration from Xochimilco to Mexico City is a major economic strategy among the economically active population over the past 30 years. Particularly, the current low percentage of agricultural EAP in Xochimilco and the high rate of emigration from the region has coincided with more access to urban markets and services because of the improved communication and transportation systems that were developed in the late 1960's and early 1970's.

Sixty percent of the total agricultural EAP of Xochimilco is directly involved in farming activities. In 1988, this figure was 27% (Canabal et al., 1992). Data show that agricultural EAP combining farming with urban jobs decreased from 73% in 1988 to 40% in 1995 (Table 4). These differences may be due to either methodological differences in sampling or agricultural changes. In 1988, only the male population was surveyed and consequently findings applied to only half of the total urban agricultural population. Second, this difference may have resulted from the fact that increased floriculture production is replacing horticulture production, especially among the young people in the 20-30 years old age group. Ornamental plants offer more competitive advantages with the expansion of the domestic urban market. Finally, a decrease in combining work activities may be also due to the frequent instability and low salaries of urban jobs, in which agriculture becomes a better economic option (Torres-Lima et al., 1994).



Table 4. Labor Characteristics of Urban Agriculturalists of Xochimilco, 1995.

Labor Characteristics	Xochimilco			
	Total		Migrants to	
	Population		Mexico City	
	1988 <sup>a</sup>	1995	1988 <sup>a</sup>	1995
<b>Regional Employment</b>				
Agriculture only	27	60	-----	-----
Agriculture and urban job	73	40	n.r.	59
<b>Permanent Regional</b>	33	20	n.r.	73
<b>Urban Job</b>				
<b>Previous Urban Job</b>	n.r.	34	n.r.	57
<b>Experience</b>				

n.r. means not reported

<sup>a</sup> Based on Canabal et al. (1992)

In 1988, 33% of the total urban agriculturists from Xochimilco had a permanent urban job (Table 4). This percentage was only 20% in 1995. This reduction may be because of a temporal combination of a poor urban labor market and more labor force incorporation into agricultural activities. However, 73% of the agricultural EAP that do emigrate to Mexico City had regular urban employment. This high percentage may indicate residents of Xochimilco's long term experience and better contacts for working within urban jobs in Mexico City. In 1995, 34% of the total urban agriculturists had previous experience in urban employment while 57% of those who migrate to Mexico City did (Table 4). This result suggests that again the labor structure in Xochimilco has been influenced by significant interactions

with urban contexts. However, the potential of Mexico City's urban labor market has not been robust enough to provide employment for most of its surrounding rural-urban regions and to cover their populations' needs. Urban agriculturists depend strongly on resources originating in their communities. The continued supply of jobs in farming and urban activities provide employment for 67% of the sample. Of this total regional job market, 60% are involved in farming activities while local urban jobs consisted in only 7%. These data show that Xochimilco is clearly a regional source of employment for urban agriculturists. Based on informant's comments, rather than seeking protection and security through the urban salaries, job benefits, collective action of political parties and urban worker organizations, the urban agriculturalists have been committed to a household union sustained by bonds of family economic interdependence and a regional common social welfare.

#### Migration to other States of Mexico and the United States

Migration from both sites to other states of Mexico is similar. In Milpa Alta, 7% of the urban agriculturist's population migrate to other states of Mexico. Eighty percent emigrate to states of central Mexico, such as the Estado de Mexico and Morelos. This kind of migration makes up the 17% of the total migrants who commute outside the region (Table 2). For those emigrants going to other parts of Mexico, 80% have been involved previously in regional urban jobs. This

may be considered as a positive influence on labor location choice since most of emigrants are involved in service occupations when they work outside Milpa Alta.

Besides states in central Mexico, other states such as Guerrero, Veracruz and Campeche were the receiving areas for 4% of urban agriculturists who emigrate from Xochimilco. This represents 13% of the total migrant population (Table 1). Although it would be expected that most emigrants from Xochimilco to other states of Mexico have previous urban experience, my results show that only 50% did. Despite this low percentage, these migrants usually work in service occupations and agriculture. This is in contrast to the emigrants from Milpa Alta who work mostly in urban jobs when they migrate to other states of Mexico. Migrants from Xochimilco combine jobs in agriculture and service because of their previous experience in both types of employment in Xochimilco during the 1980's.

Both Xochimilco and Milpa Alta have had a regular stream of migrants to other states since the 1980's. Moreover, this is the only kind of migration where the emigrants settle for longer periods outside the original town, sometimes for an entire year. The migrants stay with relatives or friends while they work and look for new employment prospects. The proportion of people who migrate to other states in Mexico from the target communities (5.3% of combined data) is almost the same as the migration trends of the general population of Mexico, 4.3% (INEGI, 1995). These findings speak to the

representativeness of internal migration of these urban agricultural communities to the rest of Mexico.

Nevertheless, migration to other states of Mexico is subjected to urban bias ("chilango syndrome") by the people from Xochimilco and Milpa Alta. For instance, a male informant from Milpa Alta expressed the following ideas,

... en otros estados todavía les falta mas cosas para que vivan mejor. Les falta educación, electricidad, servicios y otras cosas. Aqui en la capital se vive bien, se tienen cosas. Se puede conseguir un trabajito en el centro y estar aqui.

... in other states [of Mexico] they still lack more things to live better. They lack education, electricity, services and other things. Here, in the capital, we can live well, we can have things. One can get a part-time job in downtown Mexico City and stay here [Milpa Alta] (interview, October 1995, Milpa Alta resident).

In contrast, migration trends to the United States differed between the two regions. Two percent of the economically active agricultural population surveyed in Milpa Alta have emigrated to the United States while the percentage was only 0.5% in Xochimilco (Table 1 and Table 2, respectively). These data differ from the typical sending regions in Mexico, such as Michoacán, Jalisco and Guanajuato, where approximately 10% of the population migrate annually to the United States (Monto, 1994). However, using the reported

figure of 2-4% of the total population of Mexico that is involved annually in labor migration to the United States (Schmidt, 1993), the proportion of people emigrating from Milpa Alta to the United States is the same as the rest of Mexico. Migrants to the United States worked in urban jobs and occasionally in agriculture. All migrants going to the United States, had been involved in regional urban jobs before migrating. The receiving areas in the United States for urban agriculturists were primarily Los Angeles and Chicago.

By working in the United States or moving among borders and getting multinational experiences, the urban agriculturalists have learned to evaluate opportunities for subsequent migrations, and to reassess conditions in their homeland. A male informant recounted his experience,

En ese tiempo estaba la guerra y los gringos necesitaban gente para trabajar la tierra... En el condado de Stockton eramos como 5,000 trabajando por allá... la primera vez me contrate en la capital, ahí por la Ciudadela. Ahí nos vieron ellos, revisaban las manos para saber si eramos del campo... y de ahí nos fuimos. Lo de irse pues estaba bien porque se trabajaba duro, por allá se sufre. Si a uno lo veían trabajador pues lo trataban bien... a mi me sirvió mucho esa experiencia para saber valorar mi trabajo aquí.

During that time it was the war and the "gringos" needed people to work the land... In the Stockton county

we were around 5,000 people working over there... the first time I was hired in the capital, right in the Ciudadela. There, they check us out, they check out our hands to see if we were peasants... and then we went. To go over there it was okay because it was hard work, we suffered over there. If they saw one person who was a good worker, they treated us well... this experience to me was very helpful to know and value my work over here (interview, October 1995, Milpa Alta resident).

Though urban agriculturalists might be thousands of kilometers away from their homeland, their preoccupations were with the fate of their families and their regional rural homestead, and their responsibilities to their survival. These fundamental social and cultural commitments set the urban agriculturalists apart from typical urban migrants,

Yo tenia mi familia aqui y no quiere uno dejarla sola. Allá le alcanza a uno para sobrevivir pero... Donde nace uno tiene que morir.

I had my family here and one does not want to leave them alone. Over there one can earn enough to survive but... where one is born one has to die (interview, October 1995, Xochimilco resident).

#### Concluding Remarks

The territorial integration between urban centers of Mexico City, Milpa Alta and Xochimilco have resulted in the dependence on several sources of employment for a broad range

of the urban agriculturalists. The combination of urban and rural labor involvements by this type of population emerge as a result of regional migration processes, local urban development and powerful socioeconomic forces causing a convergence toward farming.

Both, the economic interplay between agriculture and urban employment, and the cultural integration of urban agriculturalists between rural and urban contexts have circumscribed the livelihood of these populations. Although urban agriculturalist livelihood is generally embedded in regional community holdings, which are the basis for their identity, there are now clear differences between the population of Xochimilco and Milpa Alta. As was described in chapter three, Xochimilco's population has been more closely integrated to urban dynamics than Milpa Alta's since the Aztec era. In this dissertation, economically active agricultural population is used as a key indicator to delineate labor trends. In Xochimilco only 16% of the economically active population is dedicated to agricultural production while in Milpa Alta the figure is 75%. This difference seems to be related more to the degree of urbanization requiring an specific different labor force than to a rigid segregation by the urban agriculturalists of their livelihood into two distinct cultural categories of rural or urban.

The evidence presented in this chapter supports the idea of the increased trend of Milpa Alta's economically active

population to combine agriculture with urban employment from 32% in 1986 to 68% in 1995. An opposite trend is observed in Xochimilco, where farming is becoming a specialized job since there is an increase in the economically active population working exclusively in agriculture from 27% in 1988 to 60% in 1995. Although the numbers of farmers have been reduced, the increasing full-time farming in Xochimilco may be due to the specialization of floricultural production that implies a high degree of technological skills in order to obtain high yields and financial success.

The importance of the regional urban employment offer is more dramatic when noting that 20% of the economically active agricultural population of Xochimilco satisfy their expectation of finding an urban job in the same region. This percentage varies as much as 10% for urban agriculturalists in the region of Milpa Alta. Moreover, migrants going to Mexico City are getting permanent regional urban jobs by 73% and 23% in Xochimilco and Milpa Alta, respectively. This high degree of urban employment by migrants from Xochimilco to Mexico City is also related to their close integration to urban dynamics. From these findings, it is clear that each region is offering important sources of employment and income not only for other types of economically active population but also for urban agriculturalists.

Urban agriculturalists' migration strategies rely mainly on the displacement of economically active household labor to Mexico City, 28% from Xochimilco and 33% from Milpa Alta. The



proportion of people who migrate to other states in Mexico and to the United States is very similar to the migration trends of the general population of Mexico. It is important to mention that the data about migration from these communities to the United States show that Xochimilco and Milpa Alta are not contributing to the "explosive migration" to this country coming from Mexico City, which has been reported (Cornelius, 1992) and which may be expected under the recent Mexican economic crisis.

## CHAPTER 5 SOCIODEMOGRAPHIC PROFILE OF URBAN AGRICULTURALISTS

### Sociodemographic Characteristics

#### Age, Gender and Marital Status

Sociodemographic data was gathered to assess the demographic determinants of urban agriculturists that affect their migration patterns, and to show differences between migrants and non-migrants. From these economic variables, the population was classified by predominant employment (agriculture and urban job) and location to migrate (Mexico City, other states of Mexico and the United States).

A comparison of the age of urban agriculturists in both towns, Xochimilco and Milpa Alta suggests that migration is related to experiences in local labor markets. Migration is occurring among the age group of 30-40, which is the economically active age-group (Table 5 and 6). Dávila and Rodriguez (1993) reported that this is the same age-group where most of the household heads had job and income in Xochimilco. However, a similar mean-age around thirty was also found for people who remain in their communities working in agriculture, as well as combining farming with urban activities. For instance, 45% of the urban agriculturalists who produce ornamental plants in Xochimilco are in the 20-30

age-group since they consider agriculture as a better economic option than the opportunity cost that an urban job may imply (Torres-Lima et al., 1994). These data suggest that either staying within two towns, and immigration offers work opportunities for people that are in their early to late thirties. Nevertheless, those that emigrate leave younger members (less than 30 years old) in the two areas. This indicates that migration may occur after laboring in regional jobs during the initial work life period (20-30), and after the completion of certain level of education, such as a technical career.

Table 5. Demographic Characteristics of Urban Agriculturalists of Milpa Alta, 1995.

Demographic Characteristics	Milpa Alta <sup>a</sup>				
	Agriculture Only	Agriculture and urban job	Migrants to Mexico City	To other States	To the U.S.
<b>Age-Group</b>					
20-30	22	19	16	57	100
30-40	34	50	56	43	-
40-50	28	25	19	-	-
more than 50	16	6	9	-	-
<b>Gender</b>					
Female	52	50	66	87	50
Male	48	50	34	13	50
<b>Marital Status</b>					
Married	41	25	58	75	50
Single	41	60	21	0	0
Other	18	15	21	25	50

<sup>a</sup> Percentages

Given the fact that working outside the home is a predominantly male endeavor, patterns of migration of urban agriculturists do not reflect the traditional sexual division of labor. Our survey was conducted according to the proportion of female per male population as reported in census data, so our results indicate the extent of women's participation in Mexico City's agriculture. For instance, in Xochimilco 59% of the urban agriculturists dedicated only to farming activities are female. In Milpa Alta the proportion of women urban agriculturists is 52%. This percentage is similar (50%) to that of those female urban agriculturists of Milpa Alta who combine agriculture with local urban jobs. Contrasting results were observed for Xochimilco, in which the female population that participates in farming and urban activities at the same time is only 38%. Immigration from Milpa Alta to Mexico City is 66% female. Unmarried women find specialized jobs in contrast to married women who are for the most part selling agricultural produce in Mexico City while their spouses are in the agricultural fields. Since working in urban employment is more common in Xochimilco than Milpa Alta, immigration to Mexico City and working at local urban jobs is predominately male. From both sites, most of the urban agriculturists likely to emigrate to other states of Mexico are women (87%). Most of them, once they are married with spouses native from these places, tend to settle for a period of years before returning and bringing those foreign

spouses home. This is true for those who migrate to the United States as well.

Differential trends were observed between urban agriculturists of Xochimilco and Milpa Alta with regard to marital status. The single population of Milpa Alta working in agriculture (41%), and combining it with urban jobs (60%) was greater than of Xochimilco (19% and 23%, respectively). This trend in Milpa Alta coincides with the youngest average age-group (mean of 31) of the population that combines farming and urban activities (Table 5).

There is greater migration among married couples than singles. Sixty-three percent of the emigrants to Mexico City from Xochimilco were married, and 62% of those leaving Xochimilco to other parts of the country were married (Table 6). Married couples from Milpa Alta made up 58% of the emigrants to Mexico City and 75% of the emigrants to other areas in Mexico. In contrast, marital status did not have strong impact on emigration to the United States. For instance, Xochimilco's migrant to the United States was not married and only half of the migrants of Milpa Alta were. This is probably because of the reduced mobility that marriage brings and the difficulty of moving an entire family across international borders. It is considerably easier to provide basic necessities such as food, clothing, shelter, and health care while remaining close to the family. This is a condition afforded by the ease of emigrating to less than one hour away to Mexico city and elsewhere in Mexico.

Table 6. Demographic Characteristics of Urban Agriculturalists of Xochimilco, 1995.

Demographic Characteristics	Xochimilco <sup>a</sup>				
	Agriculture Only	Agriculture and urban job	Migrants to Mexico City	To other States	To the U.S.
<b>Age-Group</b>					
20-30	27	31	27	62	100
30-40	36	40	41	38	-
40-50	19	19	21	-	-
more than 50	18	10	11	-	-
<b>Gender</b>					
Female	59	38	33	87	0
Male	41	62	67	13	100
<b>Marital Status</b>					
Married	66	61	63	62	0
Single	19	23	25	38	100
Other	15	16	12	0	0

<sup>a</sup> Percentages

The majority of the households in both Xochimilco and Milpa Alta involve more than 3 family members. In Xochimilco, 65% of the population interviewed reports more than 5 household members, while in Milpa Alta this figure represents 56% (Table 7). Dávila and Rodríguez (1993) reported that 81% of the households are nuclear and 14% are extended in Xochimilco. These authors also noted that the household average size includes 5 members, which coincides with this dissertation's findings. In Table 7, it is shown that most of the EAP have 1-4 economic dependents (66% for Xochimilco and

67% for Milpa Alta). These data support the idea that most of the urban agriculturalists are economically active in their thirties with children and other relatives as economic dependents.

Table 7. Comparative Percentage of The Number of Household Members and Economic Dependents of Urban Agriculturalists, 1995.

Number	Towns			
	Xochimilco		Milpa Alta	
	Household members	Economic Dependents	Household members	Economic Dependents
0	--	14%	--	23%
1 to 2	2%	28%	14%	31%
3 to 4	33%	38%	30%	36%
5 to 6	31%	13%	32%	6%
more than 6	34%	7%	24%	4%

### Education, Employment and Migration

Education has been a vehicle for finding employment in urban jobs. However, it is important to note that it is also a factor in retaining the work force within national borders, since it allows the educated to find well paying jobs within Mexico. In the words of an elderly urban agriculturalist who migrated to the United States from 1954 to 1958,

tiempo atrás la gente iba a los Estados Unidos por necesidad, porque no habia trabajo y no tenia uno estudios, para ganarse otros centavos... con los estudios uno se vuelve de la ciudad... por la educación

pues no, no se quiere ir, mi hijo se esta preparando y no tiene la idea de irse para el otro lado.

a long time ago people went to the United States because of necessity, because there were no jobs and one did not have education, to earn some pennies... with education one becomes of the city... because of education my son does not want to go [migrate], my son is studying and he does not have the idea to migrate to the other side (the United States) (interview, October 1995, Xochimilco resident).

In 1988, it was noted that 27% and 25% of urban agriculturists in Xochimilco had middle and high school education, respectively (Torres-Lima et al., 1994). Our results show that there appears to be an increase in the population having a middle school education, rising to 52% in 1995, and of those with high school education has remained the same percentage, 25% (Table 8). Given the differences in the two surveys, this trend cannot be presented with complete certainty. A different trend was found in Milpa Alta for educational levels. In 1986, 33% and 23% of urban agriculturists had middle and high school education, respectively (Torres-Lima, 1991). Our survey shows that there were increases in both education levels to 54% for middle school and 29% for high school education (Table 9). This indicates that at least a fourth of the total population of urban agriculturists in both towns have high school education. This appears to be an important factor related to



employment and financial enhancement for regional development (Torres-Lima et al., 1994). Of the population that has at least a high school education in Xochimilco, 58% are employed in urban jobs, and 78% of them emigrate to Mexico City for this purpose. In Milpa Alta, 67% of high school graduates worked in urban occupations and only 31% emigrate to Mexico City. Fewer urban agriculturists with high school education emigrate from Milpa Alta to Mexico City than from Xochimilco. This is due to the fact that Milpa Alta has better local opportunities for employment, such as teachers and technicians, than Xochimilco for educated urban agriculturists.

Beside this, the chinampas' southern zone in Xochimilco, including its passenger boats, restaurants, mariachis and markets, is now a major tourist attraction, which offers a high degree of employment for local and outsiders. Today, the heart of Xochimilco tourism is the canals. Visitors, up to 20,000 on a weekend, travel as tourists in long, flat-bottomed boats called *trajineras*. On a typical Saturday afternoon, a handful of *trajineras* ply the canals, the waters are alive with fish and snakes, and at several places herons stood watch. Around one turn, a family of urban agriculturalists is busy repairing an agricultural field. Normally, they load their *trajinera* with mud from the lake bottom and are using a net on the end of a long pole to fish mud out of boat and spread it in a thick layer on the field.

These agricultural operations are done near the tourism areas and become part of the experience for the visitors.

Table 8. Percentage of Educational Levels of Urban Agriculturalists of Xochimilco, 1995.

Educational Attainment	Xochimilco						
	Total Population		Working in Agriculture			Migrants	
	1988 <sup>a</sup>	1995	Only	And urban job	To Mexico City	To other States	To the U.S.
<b>At least</b>	27	53	52	7	36	5	0
<b>Middle School Completed</b>		(100 %)					
<b>At least</b>	25	25	42	11	45	2	0
<b>High School Completed</b>		(100 %)					

<sup>a</sup> Data based on 104 surveys in Canabal et al. (1992)

In each educational level shown in Table 8, of those surveyed from Xochimilco emigrating to Mexico City, 36% had completed middle school, and 45 % had at least a high school education. Of the migrants to other parts of Mexico, 5% had middle school education and 2% had at least a high school education. Those who migrated to elsewhere in Mexico had better education than those who migrated to the United States, none of whom had completed middle school.

Table 9. Percentage of Educational Levels of Urban Agriculturalists of Milpa Alta, 1995.

Educational Attainment	Milpa Alta						
	Total Population		Working in Agriculture			Migrants	
	1986 <sup>a</sup>	1995	Only	And urban job	To Mexico City	To other States	To the U.S.
<b>At least</b>	33	54	34	24	32	9	0
<b>Middle School Completed</b>		(100 %)					
<b>At least</b>	23	29	32	32	21	14	0
<b>High School Completed</b>		(100 %)					

<sup>a</sup> Data based on 596 surveys in Torres-Lima (1991)

Despite the fact that Milpa Alta has more rural landscape and less urban infrastructure than Xochimilco, a similar percentage (32%) of migrants to Mexico City had middle school education. However, there was a higher percentage of educated migrants from Milpa Alta to elsewhere in Mexico than from Xochimilco. For instance, 9% had at least middle school and 14% high school education, (see Table 9). Thus, this trend reflects the better education of the emigrants from Milpa Alta versus from Xochimilco. In Mexico, often the high school education includes specialized training (i.e. electrical technician, mechanical technician, food, printing and laboratory technician) that allows the student to obtain a technical position after graduation. With better

education, particularly in technical areas, higher paying jobs become available. However, as with the international norm, most technical jobs are in urban areas, forcing better educated women and men to migrate to both Mexico City and other urban parts of Mexico to find employment commensurate with their education.

Regarding migration, an important factor that is part of formal and informal education consists in the basic knowledge of another non-Spanish language, implying at least the abilities of reading and basic understanding of spoken language. This non-Spanish language becomes part of the urban agriculturalists' cultural knowledge that may be used either to reproduce regional identities (i.e. Nahuatl) or to acquire transnational information (i.e. English). In Table 10, it is noted that in Milpa Alta there are higher percentages of population with basic knowledge of another non-Spanish language. For instance, the native language of Central Mexico, Nahuatl, is understood by 19% of the population, while 16% of the interviewees have basic knowledge of English. In Xochimilco, these figures are significant lower in comparison with those of Milpa Alta, 3% and 5% respectively (Table 10). This data may be associated with a higher degree of ethnic origin and educational levels of urban agriculturalists of Milpa Alta than those from Xochimilco.

Table 10. Comparative Percentage of Urban Agriculturalists with Basic Knowledge of Other Non-Spanish Languages, 1995.

Languages	Towns	
	Xochimilco	Milpa Alta
	Population	Population
Nahuatl	3%	19%
English	5%	16%
Nahuatl and English	0.5%	3%
French	--	1%
Total	8%	35%

At the moment of the survey, all of the emigrants from Milpa Alta to the United States worked in urban jobs versus Xochimilco's emigrant to the United States who worked in both urban and agricultural jobs. The unskilled activities performed by these emigrants in their towns, especially the seasonal aspects of agricultural work, allow the workers to leave the areas when the urban jobs are cut back or when crops are harvested. All immigrants go to work repeatedly on a non-annual basis to other unskilled and seasonal jobs in the United States.

### Agricultural Characteristics

#### Farming Systems

In Xochimilco, the people working only in agriculture were divided between those engaged in ornamental plant production, vegetables, and corn. Ornamental plant and flower production, which is the most dynamic activity in terms of

the economic flow such as gross returns, variable costs, and net returns, was the primary activity for 57% of the urban agriculturalists. Horticultural production (vegetables), which is a more traditional, low-input cropping system that includes the management of regional biotic resources, was the primary activity for 28%, corn production for 6% and multiple cropping for 9% (Table 11). Of those who worked in urban jobs, 59% were engaged in ornamental plant production, 29% in vegetables, and 11% in corn.

In Milpa Alta, of the urban agriculturists strictly working in agriculture, 54% had cactus production as a economic primary activity, 28% had corn, 2% in vegetables, and 32% in multiple cropping system and foraging (Table 12). Of those who combine agriculture with urban employment, 77% grow cactus production and 23% grow corn. In general, these farming systems require a high application of skills and knowledge in managing the ecological cycles and interactions within the components of these regional agroecosystems. For example, soil fertility is increased regularly in cactus production by adding cow manure every two years.

By combining different agricultural production systems and different crops in the same field, urban agriculturalists effectively enhance the agronomic performance of these agroecosystems. In most of the cases, a high degree of plant diversity is still present within the field. For instance, in Xochimilco at least 40 different types of vegetables can be found of which 60% are sown in multiple cropping systems, and

there are 131 species of ornamental plants and flowers that are produced as cash-crops. Most of these producers grow more than five different ornamental plants at the same time, either in one field or in several plots (Torres-Lima et al., 1994).

This data suggest that there is a slight variation between urban agriculturists in Xochimilco and Milpa Alta with regard to the predominant farming system, ornamental (57%) and cactus production (59%), respectively. These variations are too small to explain migration trends. However, it is important to note that in both regions the majority of the population of urban agriculturists are involved in cash rather than subsistence crops, such as ornamental plants in Xochimilco and cactus in Milpa Alta. The daily routines of agricultural operations have been impelled by a powerful urban market logic that most of the time clashes with the traditional sensibilities and rational needs of the rural population. Thus, this urban-rural engagement involves two very different visions of social order. One is embodied in urban market relations, and the other is expressed in the context of rurality.

In general, the extension of land for agriculture in Xochimilco is smaller than in Milpa Alta. However, the spatial and temporal management of their main crops for each cropping system, ornamental plants and nopal (cactus) respectively, varies according to their agroecological requirements for each region. For instance, ornamental and

horticultural production in Xochimilco is highly intensive in terms of land, labor and inputs, and it possibly can be done on chinampa plots consisting of approximately 1,200 m<sup>2</sup>. Therefore, there is a strong correlation between the reduced amount of land and the type of crops cultivated in Xochimilco (Table 11). Despite the fact that the nopal production in Milpa Alta is also a highly intensive activity, the average extension of land for each urban agriculturalist (5,500 m<sup>2</sup>) is double that of each urban agriculturalist in Xochimilco (2,800 m<sup>2</sup>) (Tables 11 and 12). This is due to the agronomic requirements of cactus production (density, plant canopy, harvesting, etc), which implied more land extension. In Xochimilco, most of the corn production is for self-consumption, with an average of 2,450 m<sup>2</sup>, while in Milpa Alta this crop is cultivated for both purposes, self-consumption and market. In this later case, the average land used for corn is two times (6,400 m<sup>2</sup>) larger than in Xochimilco.

Table 11. Farming Systems and Land Cultivated by Urban Agriculturalists of Xochimilco, 1995.

Type of Crop	Xochimilco	
	Population	Land Cultivated (Average per Person /m <sup>2</sup> )
Flowers	57%	2,800
Vegetables	28%	1,000
Corn	6%	2,450
Multiple cropping	9%	--



Table 12. Farming Systems and Land Cultivated by Urban Agriculturalists of Milpa Alta, 1995.

Type of Crop	Milpa Alta	
	Population	Land Cultivated (Average per Person /m <sup>2</sup> )
Nopal (cactus)	54%	5,500
Corn	12%	6,400
Vegetables	2%	4,600
Multiple cropping and Forages	32%	--

### Land Tenure and Migration

Land tenure for the majority of the urban agriculturalists is private. In Xochimilco, 68% of the population surveyed own their land, while in Milpa Alta this figure represents 78% of the farmers (Table 13). These data differ slightly from those of the population who emigrate. While education is an important variable that influences migration patterns, a lack of land is not. Fifty-nine percent of Xochimilco emigrants commuting to Mexico City, and 25% emigrating to other parts of Mexico own agricultural land. In Milpa Alta, 76% of those emigrating to Mexico City and 80% of those emigrating to other part of the country own land. All migrants from both towns who migrate to the United States own land (Table 14). Therefore, migration patterns were not determined by access to land as the major productive resource that may limit agricultural production under urbanization pressures. Beside the fact that land tenure is for some urban agriculturalists a status marker. It is also desired as an

inheritance for children and represents a potential source of earnings to one's children under urbanization pressures. This situation demonstrates that most migrants retain agricultural ties to their native regional setting, indicating that migration is a temporary pattern.

Table 13. Comparative Percentage of Type of Land Tenure Among Urban Agriculturalists, 1995.

Land Tenure	Towns	
	Xochimilco	Milpa Alta
	Population (%)	Population (%)
Owned	68	78
Borrowed	20	9
Rented	6	4
Other	6	9

It is clear that the primary reason for migration from the two towns is economic. Seventy six percent of the migrants from Xochimilco to Mexico City state the reasons for their migration as economic, 50% of those immigrating to other parts of Mexico and the migrant to the United States also do so for the same reason. In Milpa Alta, 83% of the migrants to Mexico City, 80% of those going to other parts of Mexico, and 50% of those going to the United States stated economic reasons for migration. However, most of the urban agriculturalists who have gone to the United States, from the bracero program until now, stated that migration has not been a obvious preference but a economic decision. For instance, a male informant described this in the following words.

...la primera vez que me tuve que ir fue por allá de 1955, cuando me pagaban a \$0.90 la hora en el algodón allá en Texas y el dólar estaba a \$12.50 ...como nueve veces tuve que ir para ganar unos dineritos pues eramos pobres. La última vez fue por allá de 1960, ya para entonces tenia unos dineros ahorrados y era mejor quedarse por aqui trabajando. La mera verdad que no me gustó quedarme... siempre me dedique al campo, a las flores, verduras y a sembrar maiz.

... the first time I had to go over there (United States) was in 1955, when the paid me \$0.90 per hour working in cotton fields in Texas and the exchange rate was \$12.50 per dollar... nine times I had to go to obtain some money since we were poor. The last time was about 1960, by then I had some money in savings and it was better to work over here. The truth is that I did not like to stay there (United States)... I always work in agriculture, cultivating flowers, vegetables and corn (interview, October 1995, Milpa Alta resident).

Table 14. Percentages of Landowning Migrants by Receiving Areas, 1995.

	Towns					
	Xochimilco			Milpa Alta		
	Mexico City	Other states	U.S.	Mexico City	Other states	U.S.
<b>Land Ownership</b>	59	25	100	76	80	75

Agricultural Employment and Income, and Migration

Despite the fact that migration was considered as a major economic strategy among urban agriculturists, the current income profile of this population indicates the real importance of non-agricultural activities to this decision. The economic contribution of agriculture and other sources of income was evaluated for the five categories of urban agriculturists described in Tables 15 and 16. At the moment of the survey, 84% of all Xochimilco respondents, and 66% of all Milpa Alta respondents reported the income provided by farming activities as their main economic resource (Tables 15 and 16). This proportion changed to 48% in Xochimilco and 21% in Milpa Alta for those who combine agriculture and regional urban jobs. These results indicate that the percentage of income generated from agriculture is reduced when urban agriculturists have local urban jobs in either Milpa Alta or Xochimilco, relegating farming to a seasonal or part time source of income. This trend does not follow for those migrating to Mexico City. In this case, migrants to Mexico City from Xochimilco obtain 54% of their total income by farming activities in contrast with 45% from Milpa Alta. These data agree with the evidence that urban agriculturists migrating to Mexico City will not leave agricultural employment but instead combine their urban and agricultural economic strategies, since urban jobs are frequently unstable source of income. Wages earned outside the regional homestead might permit the urban agriculturalists to accumulate modest

savings and thereby accomplish an eventual repeasantization on their return to Xochimilco and Milpa Alta, as the following case demonstrates:

... la verdad es que aquí en el pueblo se vive bien y hay trabajo. Se oye bonito y de ida [a la Ciudad de México] se emociona uno mucho, ya con el trabajo pues la realidad es otra. Yo tengo 24 años trabajando en la universidad [UNAM]... como velador pues se gana poco pero ayuda para el maicito.

... the truth is that here in the town one can live well and there is work. It sounds good and when one goes to Mexico City it is exciting, but when one is working the reality is different. I have been working for the university for 24 years... as a guardian one earns very little money but it helps to cultivate corn (interview, October 1995, Milpa Alta resident).

Table 15. Percentage of Income Provided by Farming Activities Among Urban Agriculturists of Xochimilco, 1995.

Sources of Income	Xochimilco				
	Agriculture Only	Agriculture and urban job	Migrants to Mexico City	To others States	To the U.S.
<b>Agriculture</b>	84	48	54	92	50
<b>Other</b>	16	52	46	8	50
<b>Sources</b> <sup>a</sup>					

<sup>a</sup> Including urban job

Differential trends were observed between the urban agriculturists of Xochimilco and Milpa Alta with regard to the income provided by agriculture in those migrants going to other states of Mexico. The former had 92% of income provided by farming activities, while the latter only 36%. This difference may have resulted from the fact that urban agriculturists from Xochimilco continue to work in agriculture while they are migrants. They also bring back innovations to implement in their original land since their crops, ornamental plants and vegetables, are easier to adjust to new technologies and enhance their agronomic performance than corn and cactus production. If we consider that cactus farming system in Milpa Alta satisfies 80% of the total domestic demand, there is a less chance to bring technological innovations from other parts of Mexico. Moreover, a contrasting profile is for people from Milpa Alta who usually are only involved in urban jobs in both scenarios (local and elsewhere Mexico). Finally, for migrants to the United States from both towns income provided by agriculture work is small.

Farming is making an important contribution to the family economy of these urban agriculturalists. For instance, an income of between U.S.\$ 300 and 500 per month is estimated in the case of horticulturists and three times as much in the case of floriculturists in Xochimilco. Annual agricultural production of 40,000 tons and its marketing at a regional scale, may be equivalent to U.S.\$ 14 million (FAO, 1988),

which contributes to sustaining 12,000 families in the chinampa area directly involved in farming activities. The importance of the chinampa system is even more dramatic when noting that ornamental production and marketing in the Xochimilco region is satisfying the demand in Mexico City of 94% of ornamental plants and 65 % of flowers produced in pots (Torres-Lima et al., 1994).

Table 16. Percentage of Income Provided by Farming Activities among Urban Agriculturists of Milpa Alta, 1995.

Sources of Income	Milpa Alta				
	Agriculture Only	Agriculture and urban job	Migrants to Mexico City	To others States	To the U.S.
<b>Agriculture</b>	66	21	45	36	0
<b>Other</b>	33	79	55	64	100
<b>Sources<sup>a</sup></b>					

<sup>a</sup> Including urban job

From the total money that is spent or obtained from agricultural production, most of the cost of investment, transaction costs and market prices make up between 50% to 75% of the economy of each farmer. Since each urban agriculturalist invests individually (considered as a household head) a certain amount of money in their crops, we grouped the latter economic indicators depending on each individual farmer. In Xochimilco, the cost of investment represents 78%, the transaction costs 64% and the market prices 59% of the money that is in circulation in farming.

These figures vary in Milpa Alta (62%, 39% and 50%, respectively. In Xochimilco, 4% of the urban agriculturalists need to reinvest more than 100% in farming from the income of the previous season, probably by transferring funds from other economic sources such as urban employment, land rent, money transfers or family savings.

On the other hand, either in Xochimilco or Milpa Alta, most 75% and 56%, respectively, of the farmers have an income up to 50% of the total money invested as a profit. Particularly, in Milpa Alta 23 % of the urban agriculturalists obtain profits between 75% and 100%. These economic figures may suggest an important viability of urban agriculture by providing enough income to the farmers. However, in both Xochimilco and Milpa Alta the cropping systems have adjusted to different socioeconomic pressures. For instance, increased floriculture production in Xochimilco substituting horticulture represents an efficient use of external and family labor, and a more intensive use of inputs. This trend is high correlated with expansion of the domestic urban market which offers more competitive advantages for ornamentals than for vegetables. Currently, modernization of regional cropping systems such as ornamental plants and cactus production include the following: a) intensification and diversification of cropping systems, b) agricultural production integrated into the market, c) adoption of external inputs rather than a number of farming technological changes.



Therefore, a strictly traditional management of productive resources no longer enables the continuity of these cropping systems. The farmer must combine his traditional experience from an agroecological and cultural standpoint with economic viability. When these features are combined, economic success depends on two factors: a) farmers' priorities, cultural patterns and values expressed in their attitude towards conservation and management of natural resources, and b) technological efficiency of the agricultural production systems on a regional level. Lockeretz (1989) noted that any successful agricultural system depends on the economic coordination between these two factors.

The income obtained through the agricultural production allows 33% of the urban agriculturalists in Xochimilco and 32% in Milpa Alta to hire outside laborers (Table 19). This outside farm-labor is related mainly to difficult farming work and specific care of crops, mainly ornamental and cactus. Table 19 shows similarities in the outside labor force in the regions discussed. Family labor is particularly a very important input in both regions. In Xochimilco, 65% of the farmers interviewed report that family members are involved substantially in agricultural work, while 53% of the farmers in Milpa Alta do the same (Table 19). These figures show that regional agriculture of these towns in Mexico City also provides employment for outside farm labor and family members and represents an important source of income.

Since urban agriculturalists' wives and children participate in different phases of the agricultural cycle and in selling the products, the occupation of farming for the family members is more than a particular job, it is a meaningful way of life that incorporates an agrarian ethic, a sense of integration, union and participation. Through farming the family recognizes itself, its cultural values, its standard of living, its community and its regional landscape. By cultivating crops, family members of urban agriculturalists obtain emotional attachments to the region, to nature, and they get a sense of responsibility and satisfaction that rests on looking for financial achievements.

Table 19. Comparative Percentage of Type of Labor in Agricultural Production among Urban Agriculturalists.

Labor	Towns	
	Xochimilco	Milpa Alta
	Population (%)	Population (%)
Only Producer	16	26
Producer and Family Members	51	42
Producer, Family Members and Hired Labor	14	11
Producer and Hired Labor	19	21

Another economic criterion is the time spent in farming activities. Farmers are able to spend more than 8 hours/day working in their agricultural plots. However,

depending on each cropping system and each location the percentage of farmers that are able to work this period of time varies. For instance, it is reported that more than 50% of urban agriculturalists in Xochimilco work more than 8 hours/day (Torres-Lima et al., 1994). In agriculture not only the time spent in farming is important but also the knowledge and skills applied to build new technological improvements suited to the current agroecological conditions. Thus, the development of urban agriculture in Mexico City has taken into account the farmers' experience and capabilities. As we have seen in this chapter, since farmers have high educational levels, i.e. 24% of Xochimilco and 29% of Milpa Alta have studied at least high school, farming still represents a potential source of employment and income where formal education can be applied. Farmers' qualifications either for urban or agricultural employment are related to financial enhancement for regional development. For instance, by using practical knowledge and by including farming-improvements, floriculturists in Xochimilco and cactus producers in Milpa Alta have been able to obtain financial aid from regional banks. They have also organized cooperatives or farmers' associations to get technical assistance from public institutions.

#### Concluding Remarks

This analysis of the sociodemographic determinants of urban agriculturalists of Milpa Alta and Xochimilco has

revealed a number of cultural elements. One conclusion is that either staying in these regional settings or immigration offers work opportunities for people that are in their early to late thirties once they have had previous experience in laboring in regional jobs or have accomplished certain levels of education. A rural environment and agricultural employment did not turn out to be a good predictor of lack of education for these urban agriculturalists. At least a fourth of the total population in both towns has high school education. This claim expresses more a possibility to remain working in their local settings than a strict rule to avoid migration. In Milpa Alta, local ethnic identity and high level of education make up a high percentage of urban agriculturalists with basic knowledge of other non-Spanish language.

There are gender differences for migration, we observed the increasing participation of female migration from these towns to Mexico City. In Milpa Alta, some of the women's increasing participation in migration (66%) can be attributed to the cactus farming system, where perhaps there has emerged a greater emphasis on selling agricultural produce in Mexico City's markets. This emphasis reflects the greater specialization of this region, the deeper and more recent economic integration between Milpa Alta and Mexico City, the more powerful socioeconomic forces (i.e. high market prices and high yield conditions) that accompanied the shifting from traditional to cash crops, such as cactus production.

The changing economic conditions of the urban dynamics of Mexico City have produced many different options for urban agriculturalists. Ornamental and cactus production can be seen as high-input cropping systems that are expanding the number of people who can live by farming in Xochimilco and Milpa Alta. That the income generated in agriculture by many urban agriculturalists (84% and 66% for Xochimilco and Milpa Alta, respectively) has translated into higher rates of remaining in and increasing farming is an important finding. The figures on farm income and expenses suggest that these types of urban agriculture represent not only a path to support a more affluent regional standard of living but also a path to absorb low and unstable salaries through urban jobs in Mexico City. However, the risky nature of farming has allowed urban agriculturalists to either combine agriculture with urban job or migrate. Thus, agricultural production also may be successful by being aided by cash infusions from urban employment or savings.

Nevertheless, a solid diversified agriculture in these towns reflects a highly efficient use of labor. Agricultural development in these regions has involved an important employment offer, which is able to capture 33% and 30% of the outside farm-labor in Xochimilco and Milpa Alta, respectively. Most of the urban agriculturalists hired this outside farm-labor with the commitment to maintain their scale farm-operations and high yields. Thus, regional urban agriculture not only provides the urban structure of Mexico

City with water from its springs, agriculture produce from its field, open and tourism spaces for leisure and land for housing but also offers jobs for other local and outside residents.

Despite this important percentage of hired seasonal labor, urban agriculture creates jobs even inside the urban agriculturalist's family. The rise of the family participation in regional farming brings into focus the enduring and current transformation of the Xochimilco and Milpa Alta livelihood and culture. Despite the fact that new patterns of employment have strengthened an emphasis on individualism and material success with the intrusion of urban values, a shared cultural stance is still a predominant trend among urban agriculturalists. This cultural orientation rest on the primacy of connections between work, rural landscape and family that have characterized the agrarian status of this people.

Nevertheless, through migration processes a new consumer ethic has permeated the livelihood of these urban agriculturalists. Many of these people have come to embrace migration as a part of the economic and cultural change in these regions. The following chapter will present the connection between the process of migration with the urban agriculturalists' cultural systems.

CHAPTER 6  
MIGRATION AND CULTURE

Quality of Life Among Urban Agriculturalists

Cornelius (1992; 194) suggests that internal migrants, some of whom have headed for cities in United States, encountered saturated labor markets, skyrocketing living costs, dangerously high levels of air pollution and rising crime in Mexico City. In contrast, my research results show that Mexico City is not judged to be a mega-city filled with environmental and social degradation but rather a location rich with opportunities, including the opportunity to migrate for learning new skills, to obtain capital for agricultural development, and to combine secondary wage labor with primary agricultural work. The attitudes about the quality of life in Mexico City from the standpoint of the urban agriculturalists discussed differ from the migration literature written from the standpoint of the United States as receiving country. An urban agriculturalist who migrated in the late fifties to the United States summarizes his point of view about this:

la región esta bien cambiada por no cambiar, porque es bonito el paisaje de aquí, es bonito tener parcelas, los sábados y domingos y la fiesta del pueblo.

the region has changed in order to remain unchanged, the regional landscape is pretty, it is pretty to have agricultural land, Saturdays and Sundays, and the town's holidays (interview, October 1995, Milpa Alta resident).

Although Xochimilco and Milpa Alta remain as rural-urban updated regions that have adapted technological innovations of contemporary agriculture, the reproduction of these landscapes with their forms of organization, life-styles, and cultural components require that agricultural production be profitable enough and that urban agriculturalists have urban employment alternatives as a probable source of income (Torres-Lima et al., 1994).

The previous chapter presented the sociodemographic profile of urban agriculturalists and showed how farming is making an important contribution to the household economy. In this chapter, the urban agriculturalists' quality of life and cultural knowledge is presented. Whenever possible the urban characterization of the quality of life and strategies of migration is analyzed with objective data, to assess the degree to which the cultural knowledge of those people captures objective facts. In this regard, we clearly assume that urban agriculturalists' answers may include; (1) what people say about what they do (expression), and (2) what people think about what they say (representation).

According to Barlett and Brown (1985; 28), the concept of quality of life must be seen as involving both an



objective, measurable reality and a subjective, unquantifiable reality, which includes a person's ability to achieve culturally prescribed goals. In this study, I evaluated as objective material measurement the availability of certain consumer goods. As a measurement of life quality in terms of individual's assessment of their life circumstances and life satisfaction, I evaluated the perception among urban agriculturalists of life quality in 1985 and 1994.

Life-styles among urban agriculturalists may include several factors indicating social welfare levels. For instance, in Xochimilco 81% of the population surveyed have radios, 93% T.V. sets, 8% personal computers, and 57% washing machines. These figures vary slightly from data reported by Dávila and Rodriguez (1993) based on a survey carried out in 1988. The same household equipment's data in Milpa Alta also vary slightly. Thus, the percentages are 98%, 92%, 1%, and 44%, respectively. The tremendous advantage of the impressive ornamental and vegetable production in Xochimilco, the growth and marketing of the nopal cactus as a major vegetable in Central Mexico in the last thirty years, and the integration of both intensive agricultural activities to Mexico City markets make for the access to these welfare conditions and the high quality of life was measured by familial possessions for these urban agriculturalists.

In Xochimilco, 86% of the population surveyed have their own home (brick-made), 93% have electricity, 38% possess a

phone and 93% have access to potable water. In general the value of the same categories are higher on the data reported by Dávila and Rodríguez (1993). This difference may due to the fact that these authors surveyed general population while our respondents were exclusively agricultural economic active population. Meanwhile, in Milpa Alta 87% of the urban agriculturalists have their own home, 80% have access to electricity, 42% have residential phone services and 86% have potable water. This standard of housing may resemble those from any urban population living in a developed country's city.

Because of the type of urbanization processes occurring in Mexico City and the undeniable gradual environmental deterioration of the whole region, as a typical mega-city, urban agriculturalists were asked to give a comparative perspective of the quality of life between the years of 1985 and 1994 with several criteria. It is striking how their assessments of nearly all measures of quality of life declined between the two surveys.

In terms of food, the Xochimilco respondents found that in 1985 there was less food but with more quality than in 1994. Milpa Alta residents considered that they had both more food and more food quality in 1985. Because in Milpa Alta the people consume more self-produced goods, food quality may differ depending on local criteria. In both towns, the people said that they got sick more frequently in 1994 than in 1985. In terms of leisure, people from Xochimilco and Milpa Alta

reported that in 1985 they had more and better quality of leisure than in 1994. This may be related to the fact that in 1985 they had more time to spend on themselves, i.e. using less time in transportation. Both leisure and transportation were significantly much better in 1985 than 1994, mainly in Xochimilco.

In general, employment was classified by the urban agriculturalists as both more and better in 1985 than in 1994. This may have been the result of changing agricultural work alternatives that have been intimately tied to regional development. Since most of the farmers have developed their farming systems and their linkages with urban markets during the last two decades, there is a parallel trend to regional development that shows recent shifts in agricultural production. For instance, reduction in farming systems (i.e., horticulture) is related to the increase in other cropping systems (i.e., production of "flor de nochebuena", *Euphorbia heterophylla* L.). There is also a seasonal overproduction that reduces local marketing options for selected crops. Beside these factors, some farmers have periodically simplified their cropping systems by cultivating only one kind of crop as a monoculture.

Consequently, with more and better work in 1985, urban agriculturalists of both Xochimilco and Milpa Alta reported that there was also more and better income in 1985 than in 1994. Since having an urban job without abandoning agriculture has been a common pattern, less income may have

resulted from farmers whose crop fields have suffered ecological deterioration or agronomic failures, and from farmers having the frequent instability and low salaries of urban jobs. However, the predominant trend of combining rural activities with permanent urban employment is causing a convergence toward farming. An informant made the following comment:

... depende de la capacidad del trabajo de cada uno, el sueldo que gano es de la ciudad pero en lo que trabajo es con el maiz y las plantas [de ornato]. Como las de este invernadero se tiene que regar a fondo para que se de la planta. Pero soy mas campesino [que trabajador urbano].

... it depends on the work capacity of everyone, the salary that I earn is coming from the city but what I work in is cultivating corn and plants [ornamentals]. Like these in this greenhouse that have to be watered deeply in order to obtain plants. But I am more a peasant [than urban worker] (interview, October 1995, Xochimilco resident).

In the process of regional development, the restructuration of the agroecosystem to maximize food production and the intensification of production and consumption usually have been accompanied by urban pressures on water, land and ecological cycles in both towns. Both urban agriculturalists from Xochimilco and Milpa Alta, described more and better land and water in 1985 than in 1994. For instance, recent

ecological deterioration in Xochimilco has caused different problems in either horticulture or floriculture cropping system, such as floods, land sinking and increasing soil nitrate levels.

In this regard, by privileging short-term considerations of maximum economic profit over agroecological processes, there is gradual environmental degradation that is part of the urban agriculturalists' concerns. Some recent agroecological disruption in regional cropping systems have been related to the increase of agricultural pests and diseases. Urban agriculturalists reported this problem as a result of environmental deterioration on the soil and water resources used in crop production cycles. For instance, pests and diseases decreased the crop yield in 77% of the cases in Xochimilco and because of pest and disease problems, 40% of farmers have discontinued tilling their plots at least one growing season per year (Torres-Lima et al., 1994).

In this town, for the past 20 years pest and disease control has often involved the use of pesticides, which have been applied without technical assistance. Both ecological deterioration and increasing pests and diseases have caused several ecophysiological responses by the crops. Important changes have been observed by the chinampa farmers, such as reduction in crop-leaf dimensions (i.e. lettuce, spinach), fewer buds, flowers and fruits, and lower dry matter production and yield. Correspondingly, agronomic practices

have also changed, depending on the growing cycles which have become shorter.

As a result of these changes, the instability of production in terms of its quality and quantity and the insecurity of placing agricultural produce into the market are important urban agriculturalists concerns. Thus, the effect of the marked seasonal income fluctuations is mitigated if farmers have economic survival alternatives such as urban jobs. The combination of "weekend farming" with working urban jobs during the week is an economic strategy that is being used for monoculture farmers as an alternative way for satisfying family and regional needs.

Despite this trend of environmental deterioration, urban agriculturalists have opposed a strong stewardship that implies the implementation of a series of projects and actions to reestablish agricultural production, income, and social welfare levels that are meaningful to the people who live in Xochimilco and Milpa Alta. For instance, in Milpa Alta the *Comuneros Organizados de Milpa Alta* has a *Casa de la Cultura* where they are able to organize cooperatives, parades, political displays and meetings to discuss regional and local issues. The ability to maintain a particular ratio of objective social indicators to culturally defined needs, values and aspirations may vary depending on urban processes and changes. However, the regional environmental landscape, cultural practices, economic behavior and human values are part of the urban agriculturalists's recognition of their

quality of life, which contributes to the quality of the environment and living standards in Mexico City (Torres-Lima et al., 1994).

Though these urban agriculturalists participate in various forms of urban wage economy, their identities are tied to a combined cultural experience, which entails at the same time; 1) a cultural stance rooted in a rural realm, and 2) an active disengagement from the complex, social and economic and political experiences that surround and define urban labor in Mexico City, other states of Mexico and the United States. These individuals interpret this experience in terms of intense community and household struggle facing regional inequalities, as opposed to personal struggle across urban structures. For instance, this latter experience is seen by the urban agriculturalists as a way to resist or avoid different types of involvement within urban social organizations (such as unions, political parties, religious groups). A female informant referred to this as follows,

... trabajando en la delegación pues a uno lo quieren meter al sindicato, que pague sus coutas y que vaya a los desfiles... eso no me gusta ni tantito pues uno tiene sus obligaciones con los escuincles, la casa y el marido aparte de preparar la comida y todo...yo prefiero no meterme en eso y cooperar con las fiestas del pueblo que son harto trabajo.

... working at the borough offices they want me to enlist in the union, paying my fees and going to

parades...I do not like this because I have my obligations with my children, my home and my husband, moreover I have to cook and more... I prefer to be outside of this, instead I cooperate with the town's holidays that are a lot of work (interview, October 1995, Xochimilco resident).

Urban agriculturalists see the regional rural landscape not only as a bastion of social and economic security but also as a space in which cultural values and systems are reproduced. In this sense, the commitment to this rural regional landscape, their rural-urban household and quality of life is for each individual a commitment to a regional cultural identity, which has to be actively reaffirmed and reconstituted. Thus, the urban wage-earning experience is seen as merely instrumental in maintaining this identity and its meaning. The above female informant described how this experience affects her way of life.

... pues si tengo que trabajar en la delegación es para ayudar a mi marido que le gusta solo el campo...el me entiende... le digo que es por el bien de la familia pues los niños luego quieren salir y yo les digo en donde se tienen que cuidar pues hay muchos peligros... asi ellos crecen sabiendo del campo y la ciudad. Con la parcela y mi trabajo en la ciudad creo que vamos progresando, si no fuera asi seria muy triste vivir aqui.



... if I have to work in the borough offices it is because I help my husband who likes only farming... he understands me... I tell him that it is for the benefit of the whole family, when the children want to go out I can tell them where they need to take care of themselves since in the city there are a lot of risks... thus, they grew up learning about the rural and the city. With our agricultural plot and my job in the city, I think we are progressing, if it were not like that we would live very sad here (interview, October 1995, Xochimilco resident).

#### Cultural Strategies of Migration

Immigration pressures to these two regions are very low (from the total number of immigrants to Mexico City, Xochimilco receives 3% and Milpa Alta only 0.4% (INEGI, 1995)). However, in Xochimilco the agricultural production, access to labor market, urban services and regional development provide good living conditions for outsiders. Xochimilco's producers expressed that there is sufficient farming work to require the employment of an outside labor force. Interestingly, most of the people who work in agricultural activities in Xochimilco and Milpa Alta come from the same states to which the populations of these regions emigrate (Guerrero, Morelos, Estado de Mexico and Puebla). This is in no doubt due to the reciprocal contacts and economic links that are established through the

population movements among the regions. A male informant migrating from Michoacán commented about his experience in working in the chinampa system:

... vengo cada año y duro como tres meses, trabajo en la chinampas porque me agarran mas cerca que el otro lado [ los Estados Unidos] y no tengo que lidiar con los coyotes. Aqui si es bueno el trabajo pues tengo 25 años de venir viniendo a trabajar en las chinampas y la gente ya me conoce.

... I come every year and stay around three months, I work at the chinampas because they are closer than the other side [the United States] and I do not have to deal with smugglers. Here, the job is good because I have 25 years of coming to work and the local people already know me (interview, October 1995, Xochimilco resident).

Urban agriculturists perceive decisions to migrate to other states of Mexico as based on personal reasons and individual choices. In both towns, emigrating outside the community and/or the regional setting is an economic enterprise for individuals and families. To fully carry out this economic challenge involves saving money and resources that become part of the migration investment. The labor connection with these states is considered a good individual or family experience. In other words, migration from these areas is a domestic unit investment, it is not merely the result of economic crisis or economic opportunities.

Likewise, urban agriculturists appreciate that internal migration might enable the community to gain knowledge and experience from the migrants when they return. Bringing new labor perspectives enhances technological changes in agricultural production and sociocultural transformations in households. The interviewees were asked to evaluate their experience in other states of Mexico. This was the only type of migration where they evaluated those labor experiences as helpful and valuable. These experiences are used to incorporate important external strategies into their original regional environmental and sociocultural setting. One important example was the adoption of new forms of marketing ornamental plants and cactus at Mexico City's markets that migrants from Xochimilco and Milpa Alta, respectively, learned in other regions of Mexico.

Urban agriculturists also perceived that migration to the United States is based on personal reasons or individual choices. United States emigration is also considered as a financial investment, needed to better living conditions. However, this type of migration is not seen as a good return on investment as compared to migration to other states of Mexico. Migration to the United States is associated more with individual adventure than with gaining labor experience on new entrepreneurial strategies useful in the home community.

Most of the population reported that they will consider the alternative of legal migration to the United States if

they have to do so, 55% in Xochimilco and 70% for Milpa Alta. (see Table 18). In both regions, 44% of the people know where to migrate to this country (Table 19). Particularly, these people may migrate to California and Texas, 50% and 23% for Xochimilco and 54% and 21% for Milpa Alta, respectively.

Table 18. Comparative Percentage of Urban Agriculturalists Selecting Potential Ways of Migrating to the United States, 1995.

Ways of Migrating	Towns	
	Xochimilco	Milpa Alta
Legal	55%	70%
Illegal	27%	6%
Do Not Know.	18%	24%

Table 19. Comparative Percentage of Urban Agriculturalists Selecting Potential Places to Migrate at the United States, 1995.

	Towns	
	Xochimilco	Milpa Alta
Population who know where to go	44% (100%)	44% (100%)
<b>Places</b>		
California	50%	54%
Texas	23%	21%
Chicago	8%	5%
New York	7%	5%
Other	12%	15%

In general, urban agriculturalists mentioned that technology, mass media, housing and styles of working are positive aspects of the United States culture. These criteria were referred to as major determinants affecting progress and societal development. According to this, 45% and 47% of the urban agriculturalists of Xochimilco and Milpa Alta, respectively, described a good quality of life for people

born in the United States (Tables 20 and 21). Despite the potential options to migrate that local people have, and the recognition that people from the United States may have better material standards of living, 45% of the urban agriculturalists of Xochimilco and 42% from Milpa Alta perceived that a Mexican living in the United States has a bad quality of life in contrast to being in Mexico, 21% and 28% respectively (Tables 20 and 21). I believe that these individuals' assessments may affect their current expectations to migrate to the United States. In any case, the complexity of these assessments rests on the combination of cultural, economic and referential information. Migrants who went to work to the United States stated that for Mexicans there is only work and no other leisure. Since the most important for them was to obtain money by working in a seasonal job, they rejected being involved in superfluous conditions. A male informant described his experience,

... yo me dedique a trabajar, otros se arriesgaban y hasta perdian lo que ganaban. El vino y las comodidades no iban conmigo, ahi hasta con solo pensar en lo que quiere uno pues cuesta dinero... ah pero como se tiran cosas que sirven, eso si se vive bien pero como desperdician todo... ahi vi a muchos mexicanos que hasta lo miraban mal a uno, era como saber que hablamos español pero con eso de los coches y la ropa pues uno se vuelve creido y no se sabe quienes somos.

... I was only involved in working, others jeopardized and lost everything that earned. The liquor and the comfort did not get along with my way, over there everything you want has a price... but it is amazing how they throw away useful things, they live well but waste a lot... over there I saw a lot of Mexicans that see us badly, it was like each other knew that we speak Spanish but since they had nice cars and clothing they become pretentious and they did not know who we are (interview, October 1995, Xochimilco resident).

Table 20. Percentage of Attitudes about the Quality of Life of Each Receiving Area by Urban Agriculturalists of Xochimilco, 1995.

Xochimilco				
Quality of life	Bad	Regular	Good	Other
In Mexico City	21%	56%	13%	10%
In the United States	7%	27%	45%	21%
By Mexican living in the U.S.A.	45%	32%	10%	13%

Table 21. Percentage of Attitudes about the Quality of Life of Each Receiving Area by Urban Agriculturalists of Milpa Alta, 1995.

Milpa Alta				
Quality of life	Bad	Regular	Good	Other
In Mexico City	28%	59%	4%	8%
In the United States	8%	36%	47%	9%
By Mexican living in the U.S.A.	42%	30%	8%	20%

Forty percent of the older male urban agriculturists participated in the "bracero" program according to our interviews with older people (n=20). This migration stream occurred during the 1950's and 1960's. The average seasonal trips that the migrants took were 5. All the migrants worked in the United States and one also went to Canada. They worked as agricultural laborers in California and Texas. Most of the urban agriculturist migrants stated that during their migration trips efforts were offered to legalize their permanent residence status, but they declined because their objective was always to obtain money and return to buy and cultivate land. In the accounts of elderly urban agriculturalist sojourners, a male informant recounted the following experience:

... tuve como tres oportunidades de quedarme en el otro lado pero nunca, pues nunca lo intente. Siempre pensaba en la familia, en aquel entonces vivían mis padres y yo pensaba por ellos, y el lugar también. Aquí hay tierra para trabajar y cosechar lo que sembramos. Aparte, uno puede conseguir uno que otro trabajito y ganarse unos centavos. Allá no es así, aparte el clima es mas saludable aquí y produce uno su alimento, allá el clima no es muy favorable, es muy extremoso. Ahora si que aquí nacimos y crecimos.

...I had three opportunitites to stay in the other side [United States] but I never, never tried. I always thought of my family, at that time my parents were

living thus I used to think of them, and the region too. Here there is agricultural land to work and harvest what we cultivate. Moreover, one can get some part-time jobs and earn some money. Over there [United States] is not like that, besides the weather is more healthy here and one can produce one's own food, there the climate is not so good, it is very extreme. Of course, here we were born and grew up (interview, October 1995, Milpa Alta resident).

Once they returned to settle in their communities, most of them bought enough land for their families. None of the older interviewees made an illegal trip to the United States. They were always contracted to work in agricultural related jobs. During this period of time, migration to the United States or Mexico City was a predominantly male trend. An informant summarized his reflections on this issue:

... cuando ya no hubo contrataciones nunca fui de mojado, asi si nos trataban mal, ahora es mas, es peor, ahora hasta nos persiguen.

... when there wer no more labor contracts, I never went as a "wetback", in this way they treated us bad, today is worse than these times, now they harass us (interview, October 1995, Milpa Alta resident).

Migration to the United States from both Xochimilco and Milpa Alta is a trend that demonstrates a lessening reliance on education as a life strategy according to the types of jobs that they may obtain. Nevertheless, how to migrate is



well known among the urban agriculturists. The interviewees were asked open ended questions about the steps one would have to take to migrate. Participants in the study easily recognized what is needed when one decides to migrate: finding funds, selecting an intermediary and a way to get to the border, hiring a "coyote" or person to take one across the border, tricking border patrol officers, and finding cash employment were mentioned by many respondents without hesitation. This knowledge is shared in the communities regardless of the type of urban agriculturists. Slight differences were observed in having this knowledge between migrants and non-migrants in both towns. In Xochimilco, 72% of the migrant population knew this information while 59% of the non-migrant farmers also were informed of these steps. In Milpa Alta, the results were 63% and 56%, respectively. These data suggest that although the culture of migration to the United States is not present in the communities in terms of a traditional ideology surrounding it, the strategies of migration are well understood. It is important to note that most respondents discussed migration strategies as the means to migrate to a border state of Mexico as well as to the United States, suggesting that their cognitive map of migration consists first of the area of Mexico City and second, anything outside of it as an equal, unknown territory needing similar migration strategies.

It is an often argued concept that there exists a "culture of migration" in communities where migration to the

United States for wage labor is part of the life-cycle of young people based on family choices (Reichert, 1981; Monto, 1994). The urban agriculturists of Milpa Alta and Xochimilco understand migration to the United States neither as part of a community nor family "cultural strategy" but rather migrate for personal reasons. Moreover, although it has been noted that households in Mexico are the major units in which decisions about who migrates and when may occur (Donato, 1993), my data from these Mexico City communities indicate that to adopt a migration strategy in order to go to the United States is mainly an individual decision. Sixty two percent of the migrants in Xochimilco and 45% in Milpa Alta did so based on individual choice. Spouses only contribute to this decision 20% of the time for migrants in Xochimilco and 30% in Milpa Alta. Thus, in these two towns cultural knowledge and traditional beliefs about the decision to migrate are not determined by the members of the household. In these regions, agricultural resources management leads toward the innovation of productive practices and life styles, where tradition is integrated with modern methods, and self-management and decentralization of productive activities are integrated with economic productivity. The focus of attention of these urban agriculturalists is already defined, whether traditional or conventional practices are integrated or not, to enhance productivity, profitability and quality of life. Migration to the United States represents a better economic option for some farmers to reach this

enhancement than the opportunity to stay at home. Migration decisions are predominantly based on individual choices, which involve either cultural or economic elements. These individual choices are less related to the quest for family remittances or structural economic adjustments. A woman informant commented on this:

Algunas personas dicen que hay mucho trabajo y que pagan buenos sueldos, hacen capital, pero cada quien lo que piense. Pero nosotros nunca hemos salido de esto, siempre hemos estado aqui en la tierra, pobres. Some people say that there is a lot of work and they pay a good salary, they do enough capital, but every one is free to think about it. We have never gone outside of this region, we have always been here working the land, poor (interview, October 1995, Xochimilco resident).

Traditions of general migration within families vary among the sites. In Xochimilco, only 23% of the migrant population had family members with previous migratory experience and 26% of the non-migrant urban agriculturists had this family experience. In Milpa Alta, 51% of the migrant population had a close relative with migrant experience, in contrast to 14% of the non-migrant population. Each urban agriculturalist may use a set of cultural and economic experiences that are both old and new, as personal and collective. Nevertheless, while economic hardships clearly force migration to the United States, respondents saw this

type of migration as an individual, not family or community strategy of economic survival.

Table 22 shows the previous parents' experience in migrating, of the urban agriculturalists interviewed. The only significant result was for farmers' fathers migrating to Mexico City, 42% for Xochimilco. Despite the high levels of migration to the United States among older people, this did not show an important trend among the parent's population surveyed. This may due to the fact that most of the migrants' children did not continue working in regional agriculture but instead they were able to obtain higher levels of education than their parents, and consequently find a urban job. In this regard, most of the migrants who went to the United States defined that providing education and better status of living to their children were a major goal at that time.

Table 22. Comparative Percentage of Previous Parents Experience in Migrating by Receiving Area, 1995.

Receiving Area	Towns			
	Xochimilco		Milpa Alta	
	Father	Mother	Father	Mother
Mexico City	42%	4%	11%	10%
Other States	7%	--	1%	1%
U.S.A.	--	--	2%	--

#### Concluding Remarks

From the questionnaires and interviews on quality of life and migration, there emerged; (1) a consistent and

widely shared set of cultural orientations and an extensive knowledge of the strategies of migration, and (2) a full description of rural housing and appliances that documents that both Xochimilco and Milpa Alta have come a long way from images of rural poverty. On average, urban agriculturalists have a significant quantity and quality of appliances that may represent upward social mobility and personal success within the urban context of Mexico City. The levels of household goods shown in this chapter illustrate how regional urban agriculture generally supports great affluence that may be considered as classical urban. Despite the fact that there is an increasing cultural emphasis on household appliances, which are result from the extra income of wife and children's urban jobs, urban agriculturalists are relatively secure in their social standing and have been content to reproduce their rural-urban living standards.

The gradual environmental changes in these regions have affected the population's living standards. Despite the reality that their living standards are far from those that were present thirty years ago, individuals, families and communities are implementing natural resources management styles, alternate choices and market opportunities to try to achieve their visions of economic success and desired living standards. This chapter supports the urban agriculturalists' idea that the ability of the regional landscape and their communities to keep up with rural-urban conditions have emerged as a result of maintaining a particular ratio of

objective social indicators to culturally defined needs, values and aspirations. A regional stewardship has become the center stage of the ability of farming as a means to achieve this particular ratio. However, behind these agrarian values there are rapid and articulated changes promoted by urban and consumer pressures. As a result of these pressures and the instability and insecurity of agricultural production, increasing involvements in urban jobs are now part of the basis for a fulfilling life.

These involvements in outside urban jobs are still considered by urban agriculturalists as migratory trends. The changing Mexico City and regional economies have brought with them a changing moral economy of the household members implying individualistic choices and work autonomy, and personal aspirations. Until now, migration is an important choice and opportunity for personal fulfillment. Particularly, the urban agriculturalists' cultural knowledge on migration to the United States reflects people concerns and relates strategies to migrate, quality of life, and work to transnational process.

The value of the relationship between cultural knowledge and migration may be related to understanding the reproduction of the urban agriculturalists' livelihood. Thus, current cultural knowledge among urban agriculturalists on migration to Mexico City, other states of Mexico and to the United States may lead to specific individualistic behavior, but also to incorporate the technological and marketing

changes brought by development. These changes relate migration knowledge to the ecological and socioeconomic environments, and regional landscapes where urban agriculturalists make decisions. However, these changes within urban agriculturalists are not unique to Xochimilco and Milpa Alta. The relationship between development and migration throughout Mexico is creating new demands and new alternatives encoded in different cultural systems. People from these towns are defining theirs on their own terms.

## CHAPTER 7 CONCLUSIONS

This dissertation has addressed the role of the cultural interplay of labor integration between rural and urban scenarios in recasting the migration process. The urban agriculturalists of Mexico City are the heirs of this ancient interplay and the contemporary actors in this continuing process who were studied here. The convergence of urban and rural experiences at the same time among urban agriculturalists, particularly the migration journeys described in this dissertation, is unmistakable. This shared cultural stance is based on several overlapping features that define a distinctive urban-rural stewardship and distinguish it from typically Mexico City's urban identity. Using the frameworks formulated by Rollwagen (1979) and Lomnitz-Adler (1991), this dissertation has dealt with the notion of cultural systems for this shared set of behaviors, meanings, identities and relationships that are both, rural and urban. The elements of this stewardship, as a cultural trend, include patterns of change by which every individual and every household manipulate and reformulate their social and economic circumstances. Thus, they are able to face, for instance, the insecurities of urban wage employment and the instability of migration by keeping farming activities.



However, the current tendency of this urban-rural milieu includes transitional spheres where people percolate an urban identity.

At the beginning of this dissertation, three questions were put forward. The first question concerned the cultural interplay of labor integration between rural and urban scenarios in the process of migration among urban agriculturalists. The answer is that these farmers are combining agricultural and urban employment in part based on these cultural systems and economic decisions. Urban agriculturalists' goals, resources and constraints constitute a complex cultural framework for urban migration. However, what is clear is that farmers are using their cultural systems to assess regional conditions and to make decisions on migration. Current migration to Mexico City among farmers of Milpa Alta and Xochimilco conforms a pattern, which is based on regional cultural systems. The second question was related to why urban agriculturalists migrate while they intensify their agricultural production. The answer is that depending on these cultural systems, specific socio-economic conditions are satisfied and fulfilled by individual household members. Since agricultural production is not able to fulfill all the needs and expectations of urban agriculturalists of Milpa Alta and Xochimilco, by obtaining an urban job in Mexico City the farmers may fulfill certain economic concerns. Finally, the third question was, How do urban agriculturalists use and adjust their cultural systems?

The answer is that they have incorporated information, data and experiences, brought from urban scenarios and by internal regional development, into their cultural systems and knowledge base (i.e., new farming technologies for their agricultural marketing options). Today the meaning of these economic strategies is linked to these new agricultural and urban conditions. However, variation in the degree of incorporation into urban labor market is not a major source of differences in cultural patterns among migrants and non-migrants.

The importance of the findings of this dissertation might be summarized from two different levels. One, at the level of the regional culture of urban agriculturalists, and the other focusing on the more relevant issues for the relationship between migration and development and cultural change. This chapter ends with brief insights on the challenges that these urban agriculturalists and their cultural regions face in terms of contemporary conditions. These concluding remarks are intended to orient future research in this area.

### Regional Culture of Urban Agriculturalists

Urban agriculturalists' livelihood and cultural and social relations had been fully assimilated among the various social groups and household members since the early decades of the fifteenth century. The interplay among ancient and modern, rural and urban, agrarian and industrial, regional

and extralocal elements in the daily lives of the people implies the existence of cultural patterns. Though many of these populations had ancient origins, their current dynamics had been recast by the imperatives of the developing wage and industrial urban economy of Mexico City.

This dissertation has demonstrated that the identities of the urban agriculturalists have been based on the exploitation of regional natural resources, cultural and social community bonds, social organization, family relations and personal values and aspirations. Particularly, the social and labor organization of Milpa Alta and Xochimilco has historically rested on an interplay of productive roles and sociocultural statuses. The reconstruction of their past and the contemporary urban internal make up of their present demonstrates how these urban agriculturalists maneuver within the matrix of these statuses and how the regional contours of urban agriculturalist society are defined. This notion that regional culture reflects the spatial definition of the relationship between social organization and culture content and environment is drawn from the works of Steward and Kroeber.

Today, the urban agriculturalists have continued to shape the present in its own terms even after the influence and effects of the macro-urbanization process in Mexico City that has come to challenge all definitions of past, present and future for the urban agriculture and for the city itself. The historical and hegemonic process of urbanization in

Mexico City and the current macro-regional processes of change have affected the reproduction and the development of regional cultures and agroecosystems. The historic nature of these agricultural regions should be understood from two different and complementary aspects. First, appropriate technology has been developed to manage the natural resources and to control the landscape for agricultural production. Secondly, agricultural systems are the result of cultural practices, which are based on community and family ties that adapt to current urban conditions. As I have shown, this particular human-environment relationship in these agricultural regions has been developed not as method of survival as is proposed by Salles (1992), but as a regional social construction.

The permanency of this regional construction is associated with particular features of the natural environment, population, cultural production, technological heritage in farming, social and family organization, and labor activities. These are precisely the elements of the complexity and diversification of cultural systems once the regional culture of urban agriculturalists has been conceptually demarcated.

Because changing cultural systems and social practices of the families and the urban agriculturalists communities have to do with knowledge of the natural and social space, its control, and the regional labor organization, the future of this type of society depends on the propensity for change

and the capacity of adjustment within its cultural structure to the process of integration with the hegemonic urban macro-region. Currently, the intensity and persistence of this integration process have started to exceed the social resilience of the regional culture of urban agriculturalists. This social resilience indicates the capacity of cultural systems to fluctuate with certain levels of recovering from the changes produced by the population's rural-urban articulation. Thus, the ability of these cultural systems, including social groups and ecological systems, to absorb changes is being tested and subjected to perturbations by these urban processes (Torres-Lima et al., 1994).

In Xochimilco and Milpa Alta, current urban agriculturalists' behavior show that there is no uniform opposition to change, urbanization and modernization. Clearly, there are current intra-community and intra-regional variations in household composition, education, farming systems, sources of income, and migration experiences. Today these farmers are under pressure to intensify production in the face of increasing land/person ratios and growing need for cash income to purchase urban goods, educational materials, medical services, etc. Until now, these agricultural regions have shown their adaptability to urbanization. However, the dilemma of this urban agriculture is whether it is possible to maintain its integrity as traditional systems under the impact of urban market integration.

Migration and Development among Urban Agriculturalists

Urban agricultural migrants participate in different streams of migration. Usually a migrant may go to only one of three different places, Mexico City, other nearby regions of Mexico, and to the United States. Some 82% go to Mexico City, where the enticements are the strongest. This research has demonstrated that both Xochimilco and Milpa Alta are sending regions that provide labor in significant proportions and also are suppliers of agricultural products to Mexico City, since 59% of people from Xochimilco and 53% from Milpa Alta are working in agriculture and urban job at the same time, respectively.

Combined data from the two towns show 38% of the agricultural economically active population leave. Milpa Alta is very rural with 75% of its economically active population involved in agriculture while Xochimilco is considerably more urban with only 16% of its economically active population involved directly in agriculture. By examining labor organization of these two regions, we can assume that this difference seems to be related more to the degree of urbanization requiring specific different labor force than to a rigid segregation by the urban agriculturalists of their livelihood into two distinct cultural categories of rural or urban. In chapter four, we discussed that the increasing trend of Milpa Alta's economically active population to combine agriculture with urban employment from 32% in 1986 to

68% in 1995. An opposite trend was observed in Xochimilco, where farming is becoming an specialized job since there is an increase in the economically active population working exclusively in agriculture from 27% in 1988 to 60% in 1995. Nevertheless, the importance of the regional urban employment offer is more dramatic when noting that 20% of the agricultural economically active population of Xochimilco satisfy their expectation of finding urban job in the same region. This percentage varies 10% for urban agriculturalists in the region of Milpa Alta.

A significant difference between these two towns lies in the high degree of urban employment by migrants from Xochimilco to Mexico City, which is also related to their close integration to urban dynamics. From these findings, it is clear that each region is offering important sources of employment and income not only for other types of economically active population but also for urban agriculturalists.

In Xochimilco, factors such as closeness to Mexico City and crowded living conditions may lead to greater emigration. And yet a case can be argued for less emigration due to a larger population having greater skilled jobs, and higher standard of living. This turns out to be true in terms of migration to the United States. Milpa Alta migrants were much more likely to go to the United States than those from Xochimilco. However, in the other areas of migration both

towns experienced similar percentages of educated emigrants to Mexico City and other areas.

The urban agriculturists from both areas who went to Mexico City were better educated, owned land, in their thirties, and were married. Females emigrated to Mexico City in a higher proportion than males from Milpa Alta. Factors causing this migration were the proximity of the two towns to Mexico City, individual knowledge of the city, labor opportunities, and supplementing agricultural income. In spite of being land owners, agricultural earnings are unpredictable, and so outside earnings are sought often.

Married migrants made up most of the emigration to other internal areas of Mexico, particularly to nearby central regions. The receiving regions are very diverse in terms of economic development. The jobs these migrants take in these regions varied without any discernible pattern. Most of these migrants migrate with a pre-established source of employment. Very few decide to emigrate without any prior arrangements for employment. It is important to note that 5% of the combined populations choose to immigrate to other parts of the country, which is virtually the same as the 4% national average.

Migration to the United States is a predominately male pattern. The majority of migrants hold land, and go to the United States only for economic reasons while maintaining their agricultural economic ties to their homelands. Since most of these are not educated, this lack of education



restricts the migrants from obtaining higher paying jobs elsewhere in Mexico leaving the United States as the only option for improving his economic situation. The migrant may also lack personal ties to the other regions of Mexico, a side benefit of obtaining a higher education. However, these migrants do have enough knowledge obtained from communication media and through contacts who are familiar with legally entering the United States to go.

Gender, education, marital status, land tenure, and complementary urban job are major determinants of migration. Married women and men owning agricultural land are the majority of the population who migrate. In general, as far as the place of migration the agricultural activities are the point of departure and back once the people return to cultivate the land after they migrate. Thus, Mexico City is the place that may offer better qualified positions for working and an urban complementary job to urban agriculturists.

This dissertation supports the argument that in the territorial and functional integration of Mexico City, there are still important spatial processes connecting and articulating agricultural activities and urban-rural people into labor markets. Despite the fact that urbanization processes have played the role as promoters of spatial integration and economic development, as structural imperatives, the urban-rural agriculturists' demands for job are socially defined no less than territorially. Thus, as

Mexico City's societies become more complex in terms of territory, socio-economic and culturally, urban agriculturists face new market pressures and demands. For instance, in agricultural production short-term considerations of maximum economic profit over agroecological and cultural factors are being privileged (Torres-Lima et al., 1994). The final result may be a displacement of traditional community and household actions and decisions by individualistic behavior, which start to play an important role in labor allocation as is shown in this dissertation. Self-interest is part of the ideological orientation that economic success should be articulated with a mix of consumption patterns of urban external products and the desire to have a new way of life in urban environments. Thus, migration strategies are carried out as a part of an expected new quality of life, one that is translocal and often transnational.

These migration strategies in the rural-urban areas studied in the southern part of Mexico City have successfully led to increased employment and income. However, the opportunity of being employed and obtaining income from urban jobs has also increased the sharing of knowledge about migration.

The urban-rural livelihood of Xochimilco and Milpa Alta is part of a continuing effort to construct a regional identity by cultivating agricultural land and participating in daily life experiences in the urban context. This occurs

under a strong cultural penetration of new national and international models of consumption and standards of living. By having simultaneous roles as agriculturists and as urban workers, urban agriculturists' status implies the integration of two systems of local knowledge. One is related to natural resources, landscapes and agroecological processes and the other with off-farm labor. Both of these require different economic values, different socialization strategies, and different senses of time, space and culture. Broader economic processes, such as the labor integration to regional and even transnational economics systems is mediated by local knowledge, economic individual needs, and cultural responses.

#### Contemporary Imperatives

Today more than ever, the regional connection between food producers and food consumers depends on urban expansion trends. In Mexico City, territorial patterns of this urban ecosystem have lost stability between environment and human-technological capital due to the high population density and the limited social, cultural and economic development. Most of the urban setting is a subsidized ecosystem in which there is an increased need of continuous external inputs such as energy, capital and materials. This urban economy has become important for the requirement not only of food supplies but also land and labor from rural areas.

Population growth and rapid urbanization trends are leading to the hunger and malnutrition of millions of people

in both developing and developed countries. Economic and food security, employment opportunities, education and health services are restricted by scarce resources, environmental degradation and limited technology in these urban settings. In these countries, the intensity and persistence of urbanization processes have exceeded the economic and regional cultural capacity to fluctuate within certain levels for producing and delivering goods and services to the people. Sustainable development is characterized by the influence of socio-economic and cultural systems on the ability of populations to enhance ecology, primary production, social and cultural reproduction through time. In each region, these systems assess the critical processes that will determine the final development. Linkages among urbanization, agriculture and sustainable development have challenged existing boundaries between urban and rural scenarios. In some cases, as has been shown in this dissertation, migration and labor reallocation processes have been the result of the coexistence of agricultural production and urban development. To address these challenges, urban agriculture, an ancient model in Mexico City and other some world's cities, as a recent proposed economic activity in other countries (UNDP, 1996), may contribute to an urban sustainable development. By producing food, creating jobs, and improving the environment, urban agriculture is one of the worthy strategies to implement at international and regional scenarios.

Today, urban agriculture is reformulating the relationships among regional economic growth, environmental management policies, private enterprises, local communities, cultural production and households needs. The success of urban agriculture in the world will be determined by its impact upon these relationships. Answers to food production, job creation, and environmental management in urban settings are useless without reference to urban agriculture. To what extent has urban agriculture developed in the world? Does it augment food security, create jobs and incomes, enhance public health, improve sustainable natural resources management and regional development? Does urban agriculture address the actual needs of the local people? What is the character of urban agriculture transformation, and how will it impinge upon future urbanization processes and economic growth as tied to sustainable development?

To address these issues, future research should orient its efforts on the social, cultural and technological transformations affecting environment, economic growth, population and health, and how these transformations have altered the relations between urban and rural settings. In order to understand current differences and commonalties among regions, regional interrelationships and how they are spatially structured should be analyzed. We need to know if the emergence of agricultural production in cities has accompanied sustainable development processes and what will

be the relationship between urban agriculture and sustainable development in our countries as we approach the 21st century.

APPENDIX  
MIGRATION SURVEY

1.1.1. ¿Cuántos años tiene?\_\_\_\_\_

1.1.2. Sexo:  
       (        ) Masculino  
       (        ) Femenino

1.2.5. Estado civil:

- a) Casado
- b) Soltero
- c) Viudo
- d) Divorciado
- e) Unión libre

1.2.4. Cuántos hermanos tiene:\_\_\_\_\_

1.2.3. Indique el número de hijo que fue: \_\_\_\_\_

1.2.2. En su familia, Usted es:

- a) Esposo
- b) Esposa
- c) Hijo
- d) Hija

1.2.6. ¿Cuántas personas dependen económicamente de Ud?.

Especifique \_\_\_\_\_

1.2.7. ¿Cuántas personas viven en la misma casa que Ud?

Especifique\_\_\_\_\_

1.2.1. De cuántas personas está compuesta su familia:

Especifique \_\_\_\_\_

1.7.1., 1.7.2, 1.7.4. Educación

Paren-tesco	Grado	Estudios Completos	Estudios Incom-pletos	Escuela Pública	Escuela Privada
-------------	-------	--------------------	-----------------------	-----------------	-----------------

Padre	Primaria
	Secundaria
	Preparatoria
	o Vocacional
	Carrera
	Técnica
	Carrera
	Comercial
	Carrera
	Profesional
	Posgrado
Madre	Sin estudios
	Primaria
	Secundaria
	Preparatoria
	o Vocacional
	Carrera
	Técnica
	Carrera
	Comercial
	Carrera
	Profesional
Suyos	Posgrado
	Sin Estudios
	Primaria
	Secundaria
	Preparatoria
	o Vocacional
	Carrera
	Técnica
	Carrera
	Comercial
	Carrera
Profesional	
Posgrado	
Sin Estudios	

## 1.7.3

Si conoce algún otro idioma además del Español, indique:

IDIOMA	LEE	HABLA	ESCRIBE	LEE, HABLA Y ESCRIBE
--------	-----	-------	---------	----------------------

--

--



1.1.3. Si usted considera que pertenece a una comunidad indígena, en cuál de las siguientes se ubica:

- a) Otomí
- b) Nahua
- c) Náhuatl
- d) Mazahua
- e) Otro. Especifique \_\_\_\_\_

1.3.6. ¿Realiza otras actividades remuneradas además de la siembra?

( ) No                      ( ) Sí. Especifique \_\_\_\_\_

1.3.5. La chinampa/parcela que usted cultiva es:

- a) Propia
- b) Prestada
- c) Subarrendada
- d) Sólo es empleado (a)

1.3.7. Si usted es dueño de la chinampa/parcela ¿quién la trabaja?  
(pueda marcar más de una opción)

- a) Usted
- b) Amigos
- c) Familiares
- d) Trabajadores

1.3.1, 1.3.2., 1.3.3., 1.3.4. Producción

Producto que cultiva	Marque con una "X" si se cultiva	Cantidad por Cosecha	Número de Cosechas Anuales	Superficie Cultivada
-------------------------	--	----------------------------	----------------------------------	-------------------------

Nopal
Flores
Frutos
Hortalizas
Leguminosas

1.3.8. 1.4.4., 1.5.1., 1.5.2., 1.5.3., 1.5.4.

Le pedimos de favor nos indique, por una cosecha, cuánto:

MUY POCO	POCO	REGULAR	MUCHO	DEMASIADO
-------------	------	---------	-------	-----------

Invierte en su siembra
Gasta para transportarla

---

Cuesta  
venderla  
Vende  
Cuánto gana

1.4.1. En qué lugar se queda su cosecha:

- a) En el extranjero
- b) En Xochimilco
- c) En la Ciudad de México
- d) En el interior de la República Mexicana

1.4.2. Enumere en orden de importancia cómo distribuye su cosecha

- (    ) Exportación
- (    ) Consumo familiar
- (    ) Distribución en el país
- (    ) Intercambio por otros bienes y servicios

1.4.3. Para trasladar su cosecha utiliza:

- a) Transporte aéreo
- b) Animales de carga
- c) Transporte acuático
- d) Transporte automotriz

1.4.5. Utiliza los servicios de los intermediarios

- (    ) Sí            (    ) No

1.5.5. Quiénes son sus principales compradores. Enumere en orden de importancia:

- (    ) Empresas estatales
- (    ) Empresas nacionales privadas
- (    ) Empresas nacionales estatales
- (    ) Empresas extranjeras. Indique nacionalidad

---

1.5.6. Cómo le pagan principalmente sus compradores:

- a) Trueque
- b) Inmediato en efectivo
- c) A plazos (en efectivo y/o documento)
- d) Documento (cheques, vales, pagarés, etc.)
- e) Otro. Especifique \_\_\_\_\_

1.3.9. En caso de que lo necesite, le da crédito:

- a) Un prestamista (por ejemplo, un vecino)
- b) Una institución bancaria (por ejemplo, Nafinsa, Bancomer).

- c) Una institución gubernamental (por ejemplo, la Secretaría de la Reforma Agraria)
- d) Las asociaciones y confederaciones (Por ejemplo, Asociación de Chinamperos, Confederación Nacional Campesina, etc.)

1.3.10. En caso de que necesite asesoría, recurre a:

- a) Familiares y amigos
- b) Instituciones académicas
- c) Especialistas privados
- d) Instituciones gubernamentales

3.2.1. 3.2.2. 3.3.3.

Diga cuál es su opinión acerca de las formas de vida:

Muy Mala	Mala	Regular	Buena	Muy Buena
----------	------	---------	-------	-----------

Mexicana  
Estadounidense  
México-  
Norteamericana

3.2.5. 3.2.8.

Qué piensa usted acerca de los siguientes aspectos de los Estados Unidos

Muy Mal	Mal	Regular	Bien	Muy Bien
---------	-----	---------	------	----------

Del Pasado  
Histórico  
De la Forma de  
Pensar de los  
Norteamericanos  
De su Gobierno  
De su Tecnología  
De su Forma de  
Trabajo  
De su Armonía  
Familiar  
De sus Medios de  
Comunicación  
De su Gente  
De sus  
Tradiciones y  
Costumbres  
De su Religión  
De su Vivienda  
De su Armonía

Social
--------

3.2.4. 3.2.7.

Qué piensa usted acerca de los siguientes aspectos de México

Muy Mal	Mal	Regular	Bien	Muy Bien
---------	-----	---------	------	----------

Del Pasado
Histórico
De la
Forma de
Pensar de
los
Mexicanos
De su
Gobierno
De su
Tecnología
De su
Forma de
Trabajo
De su
Armonía
Familiar
De sus
Medios de
Comunicaci
ón
De su
Gente
De sus
Tradicione
s y
Costumbres
De su
Religión
De su
vivienda
De su
Armonía
Social

3.2.6. 3.2.9.

Qué piensa usted acerca de los siguientes aspectos de los  
México- Norteamericanos

Muy	Mal	Regular	Bien	Muy Bien
Mal				

Del Pasado
Histórico

De la Forma de  
Pensar de los  
México-  
Norteamericanos  
De su Gobierno  
De su Tecnología  
De su Forma de  
Trabajo  
De su Armonía  
Familiar  
De sus Medios de  
Comunicación  
De su Gente  
De sus  
Tradiciones y  
Costumbres  
De su Religión  
De su Vivienda  
De su Armonía  
Social

## 3.2.10

Cómo piensa usted de los siguientes valores de la cultura Mexicana:

Muy Mal	Mal	Regular	Bien	Muy Bien
------------	-----	---------	------	----------

Respeto a los  
Héroes  
Honestidad  
Disciplina  
Lealtad  
Honradez  
Eficiencia  
Democracia  
Progreso  
Productividad  
Unión Familiar  
Libertad  
Sinceridad  
Fe  
Comodidad  
Paz

## 3.2.11

Cómo piensa usted de los siguientes valores de la cultura Norteamericana:

Muy	Mal	Regular	Bien	Muy Bien
Mal				

Respeto a los  
Héroes  
Honestidad  
Disciplina  
Lealtad  
Honradez  
Eficiencia  
Democracia  
Progreso  
Productividad  
Unión Familiar  
Libertad  
Sinceridad  
Fe  
Comodidad  
Paz

## 3.2.12

Qué piensa usted de los siguientes valores de la cultura México-Norteamericana:

Muy	Mal	Regular	Bien	Muy Bien
Mal				

Respeto a los  
Héroes  
Honestidad  
Disciplina  
Lealtad  
Honradez  
Eficiencia  
Democracia  
Progreso  
Productividad  
Unión Familiar  
Libertad  
Sinceridad  
Fe  
Comodidad  
Paz

## 3.3.1. 3.4.1. 3.10.1

Qué documentos llevaría para trabajar en:

La Ciudad	El Interior de	Los Estados
de México	la República	Unidos

Pasaporte
Visa
Acta de
Nacimiento
Cartilla
Militar
Liberada
Identificación
Personal
Permiso
Temporal de
Trabajo
Certificado de
Salud

## 3.5.1

Cuando Usted va a Estados Unidos a trabajar lo hace de forma:

- a) Ilegal
- b) Legal

1.6.1. , 1.6.2., 1.6.3.

Anote los trabajos que ha desempeñado en los últimos 10 años.

AÑO	ACTIVIDAD	LUGAR
-----	-----------	-------

	Xochimilco	Cd. De	Interior	E.U.
		México	de la	
			República	
1984				
1985				
1986				
1987				
1988				
1989				
1990				
1991				
1992				
1993				
1994				

## 3.1.1. 3.1.2

Si hay alguien en su familia que tome la última decisión acerca de que Usted salga de Xochimilco a trabajar, es su:

- a) Padre
- b) Madre
- c) Esposa

- d) Hijos
- e) Hermanos

## 3.6.1

Escriba ocho (8) pasos que Usted cree que siguen los Xochimilcas para ir a trabajar a los Estados Unidos de manera ilegal:

- 1.-
- 2.-
- 3.-
- 4.-
- 5.-
- 6.-
- 7.-
- 8.-

## 3.7.1

Escriba cinco (5) pasos que Usted cree que siguen los mexicanos para ir a trabajar a los Estados Unidos de manera ilegal:

- 1.-
- 2.-
- 3.-
- 4.-
- 5.-

## 3.8.1

Si conoce Usted algunas instituciones gubernamentales que tengan que ver con asuntos de migración, mencione cuáles son y qué hacen.

- 1.-

---

---

---

- 2.-

---

---

---



3.9.1.

A qué Estados de Norteamérica va a trabajar.

4.1.4., 4.1.6. y 4.1.9.

Qué PIENSA usted sobre la siguiente lista de cosas de los Estados Unidos:

Muy Mala	Mala	Ni buena ni mala	Bien	Muy Bien
----------	------	------------------	------	----------

Aparatos  
Comida  
La convivencia  
de mexicanos y  
norteamericanos

4.1.4., 4.1.7. y 4.1.10.

Qué DICE usted sobre la siguiente lista de cosas de los Estados Unidos:

Habla muy mal	Habla mal	No habla ni bien ni mal	Habla Bien	Habla muy Bien
---------------	-----------	-------------------------	------------	----------------

Aparatos  
Comida  
La convivencia  
de mexicanos y  
norteamericanos

4.1.5., 4.1.8. y 4.1.11.

Indique con qué frecuencia usted consume comida y productos americanos y establece relaciones con la gente de la comunidad norteamericana.

Nunca	Rara Vez	A Veces	Frecuente-mente	Muy Frecuente-mente
-------	----------	---------	-----------------	---------------------

Aparatos  
Comida

Relaciones  
con los  
norteameri-  
canos

4.2.1., 4.2.2., 4.3.1. Y 4.3.2.

Mencione, qué tanto conoce y usa en sus chinampas las herramientas norteamericanas y la forma de trabajar de los Estados Unidos

Ninguno	Alguno	Regular	Mucho	Total mente
---------	--------	---------	-------	----------------

Conocimiento de  
Herramienta  
americana  
Uso de Herramienta  
americana  
Conocimiento en la  
forma de trabajar  
de los E.U.  
Uso de la forma de  
trabajar de E.U.

5.1.1., 5.1.2., 5.1.3., 5.2.1., 5.2.2. y 5.2.3.

Le pedimos sea tan amable de indicarnos qué tiene de la siguiente lista y cuál es la calidad de lo que nos diga que sí posee.

Ponga una X si tiene	Mala Calidad	Calidad Regular	Muy Buena Calidad
-------------------------------	-----------------	--------------------	----------------------

Radio  
T.V.  
Antena Parabólica  
Computadora  
Tocadiscos  
Aparato Modular de  
Sonido  
Horno de Microondas  
Grabadora  
Licuadora  
Freidora Eléctrica  
Tostador de Pan  
Eléctrico  
Sandwichera Eléctrica

Sartén Eléctrico  
 Cuchillo Eléctrico  
 Destapador de Latas  
 Eléctrico  
 Plancha de Vapor  
 Planchadora  
 Procesador de Alimentos  
 Aspiradora  
 Lavadora  
 Casa Propia  
 Sala  
 Comedor  
 Baño interior  
 Cocina  
 Recámaras  
 Patio  
 Garage  
 Energía Eléctrica  
 Teléfono  
 Agua Potable  
 Tabique y Concreto

6.1.1., 6.1.2., 6.1.3., 6.1.4., 6.2.1. y 6.2.2.

Le vamos a pedir haga un esfuerzo de memoria para recordar algunas cosas que hacia en 1985 y que hace ahora. La lista es la siguiente:

	Ponga una "X" si fue en 1985	Ponga una "X" si fue en 1994
--	------------------------------------	------------------------------------

En cuál año comía más  
 En cuál año comía mejor  
 En cuál año se enfermaba más  
 En cuál año iba más al médico  
 En cuál año tenía más trabajo  
 En cuál año trabajó mejor  
 En cuál año llegaba más rápido  
 a los lugares a donde iba  
 En cuál año se transportaba  
 más cómodamente a los  
 lugares a donde iba  
 En cuál año había más tierra  
 para cultivar  
 En cuál año la tierra para  
 cultivar era mejor  
 En cuál año había más agua  
 para el cultivo  
 En cuál año el agua para el  
 cultivo era mejor  
 En cuál año ganaba más dinero

En cuál año le alcanzaba más  
el dinero que ganaba  
En cuál año iba a más lugares  
para desansar y divertirse  
En cuál año eran mejores los  
lugares a los que iba para  
desacansar y divertirse

# LIST OF REFERENCES

- Abrams, P. and Wrigles, E.A. 1978. *Towns in Societies. Essays in Economic History and Historical Sociology*. Cambridge, Crambridge University Press.
- Albrecht, D. E. and Murdock, S. H. 1984. Toward a human ecological perspective on part-time farming. *Rural Sociology*. 49(3):389-411.
- Altamirano, T. and Hirabayashi, L. 1991. Culturas regionales en ciudades de America Latina: un marco conceptual. *America Indigena*. 4:17-47.
- Angulo, J. 1993. "Water control and communal labor during the formative and classic periods in central Mexico (ca. 1000 B.C.-A.D. 650)". *Research in Economic Anthropology*. suppl. 7:151-220.
- Armillas, P. 1971. Gardens on swamps. *Science*,. 174:653-661.
- Bashan, R. 1978. *Urban anthropology. The cross-cultural study of complex societies*. Palo Alto, Mayfield Publishing Co.
- Blanton, R.E. 1979. Anthropological studies of cities. *Ann.Rev.Anthropol*. 5:249-264.
- Barlett, P. F. and Brown, P. J. 1985. Agricultural development and the quality of life: An anthropological view. *Agriculture and Human Values* 2(2):28-35.
- Bennett, J.W. 1988. Anthropology and development: The ambiguous engagement. *Development*. 4:6-16.
- Berdan, F.F. 1977. "Distributive mechanisms in the Aztec economy". In *Peasant livelihood. Studies in economic anthropology and cultural ecology*. R. Halperin and J. How, eds., pp. 91-101. New York, St. Martin's Press.
- Bonfil, G. 1991. *Pensar en nuestra cultura*. Mexico, Alianza Editorial.
- Broda, J. 1989. "Geography, climate and the observation of nature in pre- hispanic Mesoamerica". In *The imagination of matter. Religion and ecology in Mesoamerican traditions*. David Carrasco, ed., pp. 139-153. Oxford, B.A.R. International Series 515.

- Brumfiel, E.M. 1983. Aztec state making: ecology, structure and the origin of the state. *American Anthropologist*. 85: 261-284.
- Brumfiel, E.M. 1989. "Factional competition in complex societies". In *Domination and Resistance*. D. Miller, M. Rowlands and C. Tilley, eds., p.128-139. London, Unwin Hyman.
- Brumfiel, E.M. 1994. Ethnic groups and political development in ancient Mexico. In *Factional competition and political development in the New World*. E. M. Brumfiel and J.W. Fox, eds., p. 89-102. Cambridge, Cambridge University Press.
- Browman, D. 1978. Cultural Continuity in Mesoamerica. World Anthropology Series. The Hague, Mouton Publishers.
- Burns, A. F. and Torres-Lima, P. 1996. Transnational migration among urban agriculturalists of Mexico City. Final Report. Miami. North-South Center, University of Miami.
- Calnek, E.E. 1982. "Patterns of empire formation in the Valley of Mexico, late postclassic period, 1200-1521". In *The Inca and Aztec states 1400- 1800. Anthropology and History*. G.A. Collier, R.I. Rosaldo and J.D. Wirth, eds., p.43-62. New York, Academic Press.
- Canabal, B., Torres-Lima, P. and Burela, G. 1992. *La ciudad y sus chinampas*. México, Universidad Autónoma Metropolitana-Xochimilco.
- Cancian, F. 1985. The boundaries of rural stratification systems. In B. R. DeWalt and P.J. Pelto, eds., *Micro and Macro levels of analysis in anthropology. Issues in theory and research*. Westview Press, Boulder.
- Cardoso, L.A. 1980. *Mexican emigration to the United States 1897-1931* Tucson, The University of Arizona Press.
- Carmack, R. M., Gasco, J. and Gossen, G. H. 1996. *The Legacy of Mesoamerica. History and Culture of a Native American Civilization*. New Jersey, Prentice Hall.
- Carr, G. 1996. Urban Indians: The invisible minority. *Urban and Race* 5(2):2,6.
- Carrasco, Pedro. 1959. "Comments [on Sidney W. Mintz's paper]. 'The plantation as a socio-cultural type' " In *Plantation systems of the new world*. V. Rubin, ed., Washington, Pan american Union.

- Carrasco, D. and Matos Moctezuma, E. 1992. *Moctezuma's Mexico. Visions of the Aztec world*. Boulder, University Press of Colorado.
- Clendinnem, I. 1991. *Aztecs. An interpretation*. Cambridge, Cambridge University Press.
- Chavira, M. 1992. De Milpa Alta y sus recursos. In CEHAM (ed.) *Historias de mi pueblo. Concurso testimonial sobre la historia y cultura de Milpa Alta. I Historia Agraria*. Desarrollo Social. Delegación de Milpa Alta, México.
- Chonchol, J. 1990. Agricultural modernization and peasant strategies in Latin America. *Int. Social Sci.J.* 124:135-151.
- Cole, J. W. and Wolf, E. R. 1974. *The hidden frontier. Ecology and ethnicity in an Alpine Valley*. Academic Press, New York.
- Conroy, M.E., Coria S., M. and Vila G., F. 1980. *Socioeconomic incentives for migration from Mexico to the U. S. Magnitude, recent changes, and policy implications*. Mexico-U. S. Migration Research Reports. Institute of Latin American Studies, The University of Texas at Austin.
- Cornelius, W.A. 1992 "From sojourners to settlers: The changing profile of Mexican immigration to the United States". In Bustamante, J.A., et al., eds., *U. S.-Mexico relations. Labor market interdependence*, p.155-195. Stanford, Stanford University Press.
- Cornelius, W. A. 1994. Foreword. In. Cook, M. E., Middlebrook, K. J., Molinar Horcasitas, J., eds., *The politics of economic restructuring. State-Society relations and regime change in Mexico*. p. xi-xix. San Diego, Center for U.S.-Mexican Studies, UCSD.
- De Janvry, A., Sadoulet, E., and Wilcox Y., L. 1989. Land and labour in Latin American agriculture from the 1950s to the 1980s. *The Journal of Peasant Studies*. 16(3): 396-424.
- Dávila, H. and Rodríguez, L. 1993. Encuestas de ingresos y gastos de los hogares en las delegaciones Azcapotzalco y Xochimilco 1998. México, Universidad Autónoma Metropolitana- Azcapotzalco, Xochimilco.
- DeWalt, B. R. 1988. The cultural ecology of development: Ten precepts for survival. *Agricultural and Human values*. 5 (1-2) : 112-123.

- DeWalt, B.R. y Pelto, P.J. 1985. Microlevel/macrolevel linkages: an introduction to the issues and a framework for analysis. En B.R. DeWalt y P.J. Pelto, eds., *Micro and macro levels of analysis in anthropology. Issues in theory and research*. p. 1-21. Westview Press, Boulder,
- Díaz-Briquets, S. and Weintraub, S. 1991 "Series preface". In Díaz-Briquets, S. and Weintraub, S., eds., *Migration, remittances and small business development. Mexico and Caribbean Basin countries*. p.i-xv. Boulder, Westview Press.
- Doolittle, W.E. 1990. *Canal irrigation in prehistoric Mexico: The sequence of technological change*. Austin, University of Texas Press.
- Donato, K. M. 1993. "Current trends and patterns of female migration: Evidence from Mexico." *International Migration Review*, 27:748-771.
- Doughty, P.L. 1970. Behind the back of the city: "provincial" life in Lima, Peru. In *Peasants in cities. Readings in the anthropology of urbanization*. Mangin, W., ed., p. 30-46. Boston, Houghton Mifflin Co.
- Eames, E. and Granich Goode, J. 1978. *Anthropology of the city. An introduction to urban anthropology*. New Jersey, Prentice-Hall Inc.
- Ellen, R. 1979. Introduction: Anthropology, the environment and ecological systems. In P. C. Burnham and R.F. Ellen., ed., *Social and Ecological Systems*. London, Academic Press.
- Ellen, R. 1982. *Environment, subsistence and system. The ecology of small-scale social formations*. Cambridge University Press. Cambridge.
- Ellen, R. F. 1990. Trade, environment, and the reproduction of local systems in the moluccas. In E.F. Moran, ed., *The ecosystem approach in anthropology. From the concept to Practice*. The University of Michigan Press, Ann Harbor.
- Escobar, A. 1991. Anthropology and the development encounter: the making and marketing of development anthropology. *American Ethnologist*. 18(4):658-682.
- Escobar, A. 1992. Imagining a post-development era? Critical thought, development and social movements. *Social Text*. 31/32:20-56.



- Fox, R.G. 1977. *Urban anthropology. Cities in their cultural settings*. New Jersey, Prentice-Hall Inc.
- Foucault, M. 1980. *Power/Knowledge. Selected interviews and other writings 1972-1977*. New York. Phanteon Books.
- Friedmann, J., Gardels, N. and Pennik, A. 1988. The politics of space: five centuries of regional development in Mexico. *Int.Journal of Urban and Regional Research*. 4(3) 319-349.
- Fuller, A. M. 1984. Part-time farming: the enigmas and the realtities. In Schwarzweller, H. K. ed., *Research in Rural Sociology and Development*. p.122-127. Greenwich, CT, JAI Press.
- Gallopin, G.C., P. Gutman, and H. Maleta. 1989. Global impoverishment, sustainable development and the environment: a conceptual approach. *Int Social Sci. J.* 121:375-397.
- Garcia, J. Z. 1993 "Migración y posmodernidad. Efectos culturales. Una nueva ciencia social fronteriza?" *Rev. Nueva Sociedad*, 127: 148-157.
- Garcia-Canclini, N. 1993. *Transforming modernity. Popular culture in Mexico*. Austin. University of Texas Press.
- Gonzalez, S. 1988. *Tlahuac prehispanico*. Mexico: Editorial Porrua.
- González-Aréchiga, B. 1992 "Undocumented Mexicans on the Mexican northern border: Their identity and role in regional development". In Bustamante, et al., eds., *U. S.-Mexico relations. Labor market interdependence*, p.319-352. Stanford, Stanford University Press.
- Grigsby, T.L. and Cook de Leonard, C. 1992. "Xilonen in Tepoztlán: A comparison of Tepoztecan and Aztec agrarian ritual schedules." *Ethnohistory* 39(2):108-147.
- Gross, D. R. 1990. Ecosystems and methodological problems in ecological anthropology. In E. F. Moran, ed., *The ecosystem approach in anthropology. From concept to practice*. p. 309-319. Ann Arbor. The University of Michigan Press.
- Grossman, L. 1981. The cultural ecology of economic development. *Annals of the Association of American Geographers*. 71(2):220-?.
- Gutman, P., Gutman, G., y Dascal, G. 1987. *El campo en la ciudad: La producción agrícola en el Gran Buenos*

Aires. Buenos Aires. Centro de Estudios Urbanos y Regionales.

- Halperin, R. H. 1989. Ecological versus economic anthropology: changing "place" versus changing "hands". *Research in Economic Anthropology* 11:15-41.
- Hammond, M. 1972. *The City in the Ancient World*. Cambridge, Harvad University Press.
- Hardesty, D. L. 1977. *Ecological anthropology*. John Wiley and Sons. New York.
- Hardesty, D. L. 1980. The ecological perspective in anthropology. *American Behavioral Scientist*. 24(1):107-124.
- Hardoy, J.E. 1973. *Pre-columbian cities*. USA, Walker and Company.
- Hassig, R. 1985. *Trade, tribute and transportation. The sixteenth-century political economy of the Valley of Mexico*. USA. University of Oklahoma Press, Norman.
- Hassig, R. 1994. *Mexico and the Spanish conquest*. London, Longman.
- Hausler, S. 1992. Reformulating social, cultural and ecological sustainability. *Development*. 2:46-50.
- Hilhorst, J.G.M. 1990. *Regional Studies and Rural development*. Avebury, Aldershot.
- Holmes, Douglas R. 1986. *Cultural disenchantments. Worker Peasantries in Northeast Italy*. Princenton, Princenton University Press.
- Hodge, M.G. 1984. *Aztec City-States*. Memoirs of the Museum of Anthropology. University of Michigan. No.18. Ann Arbor.
- Honigmann, J. J. 1976. *The development of anthropological ideas*. The Dorsey Press. Illinois.
- Hurt, R.D. 1987. *Indian agriculture in America. Prehistory to the present*. Lawrence, University Press of Kansas.
- Instituto Nacional de Estadística Geografía e Informática 1994a. *Xochimilco, D.F. Cuaderno estadístico delegacional*. INEGI. México,
- Instituto Nacional de Estadística Geografía e Informática 1994b. *Milpa Alta, D.F. Cuaderno estadístico delegacional*. INEGI. México.

- Instituto Nacional de Estadística Geografía e Informática  
1995. *Migración reciente en Mexico. 1985-1990*.  
INEGI. México.
- Jochim, M. A. 1981. *Strategies for survival. Cultural behavior in an ecological context*. Academic Press. New York.
- Jones, E. 1966. *Towns and Cities*. New York, Oxford University Press.
- Katz, F. 1974. *The ancient american civilizations*. New York, Praeger Publishers.
- Kemper, R.V. y Royce, A.P. 1979. Mexican urbanization since 1821: a macro- historical approach. *Urban Anthropology* 8(3/4):267-289.
- Kottack, C.P. 1990. Culture and "economic development". *American Anthropologist*. 92:723-731.
- Kroeber, A. L. 1963. *Anthropology: Culture patterns and processes*. A Harbinger Book. New York.
- Leeds, A. 1979. Forms of urban integration: "social urbanization" in comparative perspective. *Urban Anthropology* 8(3-4):227-247.
- Leon-Portilla, M. 1987. *Mexico-Tenochtitlan. Su espacio y tiempo sagrados*. Mexico City, Plaza y Valdes.
- Leon-Portilla, M. 1992. *The Aztec image of self and society. An introduction to Nahua culture*. Salt Lake City. University of Utah Press.
- Lockeretz, W. 1989. Problems in evaluating the economics of agriculture. *Agric.Ecosystems Environm.*, 27:67-75.
- Lockhart, J. 1992. *The Nahuas after the conquest. A social and cultural history of the Indians of Central Mexico, Sixteenth through eighteenth centuries*. Stanford, Stanford University Press.
- Lombardo de Ruiz, S. 1973. *Desarrollo urbano de México-Tenochtitlan según las fuentes históricas*. Distrito Federal. SEP/INAH.
- Lomnitz, L. 1978. Mechanisms of articulation between shantytown settlers and the urban system. *Urban Anthropology* 7(2):185-205
- Lomnitz-Adler, C. 1991. Concepts for the study of regional culture. *American Ethnologist*. 18(2):195-214.

- Lopez, R., Adelaja, A. and Andrews, M. 1988. The effects of suburbanization on agriculture. *Amer. J. Agr. Econ.* 70:346-358.
- Love, T. F. 1977. Ecological niche theory in sociocultural anthropology: a conceptual framework and an application. *American Ethnologist* 4(1):27-64.
- Lowenthal, A.F. and Burgess, K. 1993. *The California-Mexico connection*. Stanford, Stanford University Press.
- Martinez, J. 1957. *Mexican emigration to the U. S. 1910-1930*. University of California. mimeo.
- Martinez, M. de J. 1987. *El sistema de cargos y fiestas religiosas. Tradición y cambio en Milpa Alta*. Coordinación de Sistema de Universidad Abierta. UNAM, México
- Mangin, W. (ed.) 1970. *Peasants in cities. Readings in the anthropology of urbanization*. Boston, Houghton Mifflin Co.
- Margolies, L. 1979. Introduction: the process of social urbanization in Latin America. *Urban Anthropology* 8(3/4):267-289.
- Matos Moctezuma, E. 1987. "The temple mayor of Tenochtitlan: History and interpretation". In *The great temple of Tenochtitlan. Center and periphery in the Aztec world*. Broda, J., Carrasco, D. and Matos Moctezuma, E., eds., p.15-60. Berkeley, University of California Press.
- Mintz, Sidney. 1959. "The plantation as a socio-cultural type" In *Plantation systems of the new world*. V. Rubin, ed., Washington, Pan american Union.
- Monto, A. 1994. *The roots of Mexican labor migration*. Connecticut, Praeger.
- Pastor, R.A. and Castañeda, J.G. 1988. *Limits to friendship: The United States and Mexico*. New York, Alfred A. Knopf.
- Moran, E. F. 1982. *Human adaptability. An introduction to ecological anthropology*. Boulder, Westview Press.
- Morrissey, R.J. 1957. "Colonial agriculture in New Spain". *Agricultural History*. 31:24-29.
- Muga, D. A. 1990. The Marxist problematic as a model interdisciplinary approach to ethnic studies. *The Journal of Ethnic Studies*. 17(4):53-79.

- Netting, R. McC. 1982. The ecological perspective: Holism and scholastic in Anthropology. In *Crisis in Anthropology. View from Spring Hill, 1980*. p. 271-292. New York, Garland Publishing Inc.
- Netting, Robert McC. 1993. *Smallholders, householders. Farm families and the ecology of intensive, sustainable agriculture*. Stanford, Stanford University Press.
- Nichols, D.L. y Frederick, C.D. 1993. Irrigation canals and chinampas. Recent research in the Northern Basin of Mexico. *Research in Economic Anthropology*. Supplement 7:123-150.
- O'Laughlin, B. 1975. Marxist approaches in anthropology. *Ann. Rev. Anthropol.* 4:341-370.
- Orlove, B. S. 1980. Ecological anthropology. *Ann. Rev. Anthropol.* 9:235- 273.
- Ortner, S. B. 1984. Theory in anthropology since the sixties. *Comparative Study of Society and History* . 26(1): 126-166.
- Palerm A. 1972. *Agricultura y sociedad en mesoamérica*. Mexico, D.F. Secretaria de Educación Pública, SepSetentas #55.
- Parsons, J.R. 1974. The development of a prehistoric complex society: a regional perspective from the Valley of Mexico. *Journal of Field Archaeology* 1:81-108.
- Parsons, J.R. 1976. "The role of chinampa agriculture in the food supply of Aztec Tenochtitlan". In *Cultural change and continuity. Essays in honor of James Bennett Griffin*. C.E. Cleland, ed., p.233-262. New York, Academic Press.
- Parsons, J.R., Parsons, M.H., Popper, V. and Taft, M. 1985. Chinampa agriculture and Aztec urbanization in the Valley of Mexico. In *Prehistoric intensive agriculture in the tropics. Part I*. I.S. Farmington, ed., p. 49-96. England, BAR International Series #232.
- Parsons, J.R. 1991. "Political implications of prehispanic chinampa agriculture in the Valley of Mexico". in H.R. Harvey, ed., *Land and politics in the Valley of Mexico. A two thousand year perspective*. Albuquerque, University of New Mexico Press.
- Pelto, P.J. y Pelto, G.H. 1975. Intra-cultural diversity: Some theoretical issues. *American Ethnologist*. 2(1):1-18.

- Perez Zevallos, J. M. 1984. "El gobierno indigena colonial en Xochimilco (siglo XVI)". *Historia Mexicana* . 33(4): 445-462.
- Portes, A. and Bach, R. 1985. *Latin journey. Cuban and Mexican migrants in the United States*. Berkeley, University of California Press.
- Press, I. and Smith, M.E. 1980. *Urban Place and Process: Readings in the Anthropology of Cities*. New York, MacMillan Publishing Co., Inc.
- Rappaport, R. A. 1990. Ecosystems, populations and people. In E. F. Moran, ed., *The ecosystem approach in anthropology. From the concept to Practice*. The University of Michigan Press, Ann Harbor.
- Reichert, J. 1981. The migrant syndrome: Seasonal U. S. wage labor and rural development in Central Mexico. *Human Organization*., 40(1):56-66.
- Richerson, P. J. 1977. Ecology and human ecology: a comparison of theories in the biological and social sciences. *American Ethnologist* . 4(1):1-26.
- Rico, C. 1993. From State to "state". Managing Mexico's California connection. In *The California-Mexico Connection*. Lowenthal, A.F. and Burgess, K., eds., p. 239- 253, Stanford, Stanford University Press.
- Roberts, B. *Cities of Peasants. The political economy of urbanization in the third world*. Beverly Hills. Sage Publications.
- Ronfeldt, D. and Ortiz de Oppermann, M. 1990. *Mexican immigration, U. S. investment, and U. S.-Mexican relations*. California, The RAND Corporation and The Urban Institute.
- Rojas R., T. 1984. "Agricultural implements in Mesoamerica". In *Explorations in Ethnohistory. Indians of Central Mexico in the sixteenth century*. H. R. Harvey and H.J. Prem, eds., p. 175-204. Albuquerque, University of New Mexico Press.
- Rojas R., T. 1991. "Ecological and agricultural changes in the chinampas of Xochimilco-Chalco". in H.R. Harvey, ed., *Land and politics in the Valley of Mexico. A two thousand year perspective*. University of New Mexico Press, Albuquerque.
- Rollwagen, J.R. 1979. Some implications of the world system for the anthropological study of Latin American urbanization. *Urban Anthropology* 8(3/4):249-265.

- Rothstein, F. 1988. Global views and human action in a rural community in Mexico. *Urban Anthropology* 17(4):365-381.
- Roseberry, William. 1976. "Rent, differentiation and the development of capitalism among peasant" *American Anthropologist* . 78: 45-58.
- Ruttan V.W. 1988. Cultural endowments of economic development: what can we learn from anthropology? *Economic Development and Cultural Change*. 36(3) S247-S272.
- Sabloff, J.A. 1989. *The cities of ancient Mexico. Reconstructing a lost world*. New York, Thames and Hudson.
- Salles, V. 1992. Xochimilco: Perdurabilidad de la tradición en un contexto de cambio. *Estudios Sociológicos*, El Colegio de México. 10(9):341-362.
- Sanders, W.T. and Price, B.J. 1968. *Mesoamerica. The evolution of a civilization*. New York, Random House.
- Sanders, W.T., Kovar, A., Charlton, T. and Diehi, R.A. 1970. *The natural environment, contemporary occupation and 16th century population of the Valley*. Occasional Papers in Anthropology #3. The Pennsylvania State University. University Park.
- Sanders, W.T. and Santley, R.S. 1983. "A tale of three cities: Energetics and urbanization in Pre-hispanic Central Mexico". In *Prehistoric settlements patterns. Essays in honor of Gordon R. Willey*. E.Z. Vogt and R. M. Leventhal, eds., p. 243-291. Cambridge, University of New Mexico Press and Peabody Museum of Archaeology and Ethnology, Harvard University.
- Sassen, S. 1992. Why immigration? *Report on the Americas* 26(1): 14-19.
- Scarborough, V.L. 1991. "Water management adaptations in Non-industrial complex societies: An archaeological perspective". In *Archaeological method and theory*. M.B. Schiffer, ed., pp. 101-154. Tucson, The University of Arizona Press.
- Schwartz, N.B. 1978. Community development and cultural change in Latin America. *Ann.Rev.Anthropol.* 7:235-261.
- Scott, I. 1982. *Urban and spatial development in Mexico*. Baltimore, The Johns Hopkins University Press.

- Shaedel, R. P., Hardoy, J.E. and Scott Kinzer, N. (eds.) 1978. *Urbanization in the Americas from its beginnings to the present*. The Hague, Mouton Publishers.
- Smit, J. y Nasr, J. 1992. Urban agriculture for sustainable cities: using wastes and idle land and water bodies as resources. *Environment and Urbanization*. (4) 2:141-152.
- Smith, C.E. 1985. "Agricultural intensification in the Mexican highlands". In *Prehistoric intensive agriculture in the tropics*. I.S. Farrington, ed., p. 501-520. Oxford, B.A.R. International Series 232.
- Smith, M.E. 1986. "The role of social stratification in the Aztec empire: A view from the provinces". *American Anthropologist* 88:70-91.
- Smith, M.E. and Hodge, M.G. 1994. "An introduction to late postclassic economies and polities". In *Economies and polities in the Aztec realm*. Hodge, M.G. and Smith, M.E., eds., p. 1-42. Albany, Institute for Mesoamerican Studies. *Studies on Culture and Society* Vol. 6, The University of Albany.
- Smith, M.E., Heath-Smith, C., Kohler, R. Odess, J. Spanogle, S. and Sullivan, T. 1994. "The size of the Aztec city of Yauhtepec. Urban survey in Central Mexico". *Ancient Mesoamerica* 5:1-11.
- Soustelle, J. 1961. *Daily life of the Aztecs on the eve of the Spanish conquest*. Stanford, Stanford University Press.
- Spindler, L.S. 1977. *Culture change and modernization*. New York, Holt, Rinehart and Winston.
- Stantley, R.S. and Hirth, K.G. 1993. *Prehispanic domestic units in western mesoamerica. Studies of the household, compound and residence*. Boca Raton, CRC Press.
- Steward, J. H. 1955. *Theory of Culture Change*. University of Illinois Press, Urbana.
- Taggart, J. M. 1983. *Nahuatl Myth and Social Structure*. Austin, University of Texas Press.
- Todorov, T. 1984. *The conquest of America. The question of the other*. New York, Harper and Row, Publishers.
- Torres-Lima, P. 1991. *Los campesinos en la estructura urbana. El caso de Milpa Alta*. Mexico. Universidad Autonoma Metropolitana-Xochimilco.



- Torres-Lima, P., B. Canabal-Cristiani, and G. Burela-Rueda. 1992. "Sustentabilidad, viabilidad económica y estrategias del modelo chinampero." *Rev. Geografía Agrícola*, 17: 127-133.
- Torres-Lima, P., B. Canabal-Cristiani, and G. Burela-Rueda. 1994. Urban sustainable agriculture: The paradox of the chinampa system in Mexico City. *Agriculture and Human Values*, 11(1):37-46.
- Towsend, R.F. 1992. *The Aztecs*. New York. Thames and Hudson.
- Turner, Victor. 1967. *The forest of symbols: Aspects of Ndembu ritual*. Ithaca, Cornell University Press.
- Turner II, B.L. 1983. Comparison of agrotechnologies in the basin of Mexico and Central Maya lowlands: formative to the classic Maya collapse. In *Highland-Lowland Interaction in Mesoamerica: Interdisciplinary Approaches*. Miller, A.G., ed., p.13-47. Washington, Dumbarton Oaks Research Library and Collection.
- United Nations Development Programme (UNDP). 1996. Urban Agriculture. Food, Jobs and Sustainable Development. New York, UNDP. Publication Series for Habitat II. Vol. 1.
- Uzzell, D. 1979. Conceptual fallacies in the rural-urban dichotomy. *Urban Anthropology* 8 (3/4):333- 350.
- Van Young, E. 1992. Introduction: Are regions good to think?. In E. Van Young (ed.). *Mexico's regions. Comparative history and development*. Center for U.S.-Mexican Studies. UCSD. California.
- Vayda, A. P. 1968. An ecological approach in cultural anthropology. In W. R. Burch, ed., *Readings in ecology, energy and human society: Contemporary Perspectives*. p. 3-8. New York. Harper and Row Publishers. N
- Vayda, A. P. and McCay, B. J. 1975. New directions in ecology and ecological anthropology. *Annual Review of anthropology*. 4:293-306.
- Vayda, A. P. and Rappaport, R. A. 1968. Ecology: Cultural and Non-Cultural. In J. A. Clifton, ed., *Introduction to cultural anthropology*. New York. James A. Clifton.
- Ward, P.M. 1990. Mexico City. *The production and reproduction of an urban environment*. Boston, G.K. Hall & Co.
- Weintraub, S., et al. 1991 *U.S.-Mexican industrial integration. The road to free trade*. Boulder, Westview Press.

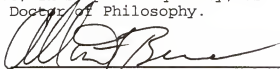
- Wilk, R. R. 1990. Household ecology: Decision making and resource flows. In E. F. Moran, ed., *The ecosystem approach in anthropology. From the concept to Practice*. Ann Harbor. The University of Michigan Press,
- Wolf, E.R 1959. "Specific aspects of plantation systems in the new world: Community sub-culture and social classes." In *Plantation systems of the new world*. V. Rubin, ed., Washington, Pan american Union.
- Wolf, E.R. 1976. *The Valley of Mexico. Studies in Pre-hispanic ecology and society*. Albuquerque. University of New Mexico Press.

## BIOGRAPHICAL SKETCH

Pablo Torres-Lima was born in Mexico City, México, on March 28, 1959. He received his high school education in Mexico City. He entered Universidad Autónoma Metropolitana-Xochimilco and obtained his Engineer and Master of Science degrees in Agronomy and Rural Development in 1981 and 1988, respectively. He obtained a second Master of Science in Plant, Soil and Environmental Sciences at the University of Maine, Orono in 1994. After working as part of the Faculty of the Universidad Autónoma Metropolitana-Xochimilco since 1981, he was the depository of CONACYT-Fulbright Foundation and Universidad Autónoma Metropolitana scholarships for studying a graduate program in the United States.

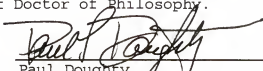
In Fall 1994, he was enrolled for a Ph. D. program in anthropology at the University of Florida. He is a candidate for the degree of Doctor of Philosophy in Anthropology from the University of Florida, Gainesville, in Spring 1997.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Allan F. Burns, Chair  
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Paul Doughty  
Distinguished Service  
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Hugh Popenoe  
Professor of Soil and Water  
Resources

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Marianne Schmink  
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Ivonne Audirac-Zazueta  
Assistant Professor of Urban  
and Regional Planning

This dissertation was submitted to the Graduate Faculty of the Department of Anthropology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

May, 1997

---

Dean, Graduate School